Senator Paul Simon Water for the Poor Act of 2005

Report to Congress June 2006

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Executive Summary

President Bush signed the Senator Paul Simon Water for the Poor Act of 2005 (the Act) on December 1, 2005. The act emphasizes the provision of affordable and equitable access to safe water and sanitation in developing countries as a component of U.S. foreign assistance programs. It requires the Secretary of State, in consultation with the U.S. Agency for International Development (USAID) and other U.S. Government (USG) agencies, to develop a strategy "to provide affordable and equitable access to safe water and sanitation in developing countries" within the context of sound water management. It also requires the Secretary of State, in consultation with the USAID Administrator, to submit a report describing that strategy not later than 180 days after the date of enactment of the Act and annual reports thereafter. The legislation also asks for a report "on efforts that the United States is making to support and promote programs that develop river basin, aquifer, and other watershed-wide mechanisms for governance and cooperation."

This report is the first report in response to these requests. As such, it does not represent a final statement but the beginning of a long-term process to develop and implement a strategy to improve U.S. efforts on international water issues. The U.S. has undertaken a significant reorganization of its framework for prioritizing and coordinating foreign assistance. It is within this context that this initial report was developed.

Today, more than 1 billion people lack access to improved water sources and more than 2 billion people lack access to improved sanitation. Even more people lack access to safe drinking water or use sanitation facilities to effectively protect public health. At any given point in time, over 50 percent of the world's hospital beds are occupied by people suffering from water-related diseases. Each year, nearly 2 million people – most children under five – die from diarrhea, a disease which is easily preventable through safe water supply, sanitation, and hygiene. Beyond its impacts on human health, sound water management is critical to promoting economic growth, ensuring sustainable food supplies, and preserving ecosystems upon which most of the world's inhabitants depend. Water may also become a source of tension. More than 260 watersheds are shared by two or more countries. As resources become scarce, competition could lead to increasing tensions at the local, national, and regional levels. Finally, because water is something that each and every person needs, water can promote democracy and cooperation. At the local and national level, water can be a means for promoting user groups, public-private partnerships, and other mechanisms for improving public participation in decision-making. Citizens will increasingly expect greater accountability and transparency of institutions, organizations, and businesses responsible for meeting basic needs. Shared water management can also strengthen regional ties and promote integration of goods, services, and people in places prone to conflict.

In FY 2003-2005, more than $1.7 billion in official development assistance was obligated for over 100 water and related activities in developing countries around the world. Over 24 million people received improved access to safe drinking water, and over 26 million people received access to improved sanitation. More than 15 USG agencies and departments support international work on water, but very few receive direct appropriations to carry out this work.

The majority of USG funding was provided by USAID, the Department of Defense, the Millennium Challenge Corporation, the U.S. Department of State, and the U.S. Environmental Protection Agency.

The goal of U.S. foreign assistance is to help build and sustain well-governed, democratic states that will respond to the needs of their people and conduct themselves responsibly in the international system. President Bush has said that combating poverty is a "moral imperative" and a process that must include "all of the world's poor." Water and sanitation are essential to achieving the foreign assistance goal by protecting human health and responding to humanitarian crises, promoting economic growth, and enhancing security. Addressing water and sanitation needs also fosters public participatory processes that improve transparency and accountability, leading to more just and responsive institutions that meet the needs of people. Within this context the U.S. objectives on water are to:

- **Increase access to, and effective use of, safe water and sanitation to improve human health;**
- **Improve water resources management and increase water productivity; and**
- **Improve water security by strengthening cooperation on shared waters.**

To achieve these objectives the United States will build capacity, strengthen the use of science in decision-making, and promote innovative approaches and technologies. Through national, regional and global processes, the U.S. will work to build political will and international commitment, and to advance partnerships.

Projects and programs will be guided by a number of key overarching principles, including:

- A country-driven approach – we will look for countries and communities that are committed to working with us to address these challenges;
- Results-based programming – metrics will be developed to measure the results of U.S. projects and programs and investments made where the largest returns can be obtained;
- Maximizing impact – a number of considerations will be taken into account to improve the effectiveness of U.S projects and programs, including meeting the special needs of women and children and building on previous work within the region; and
- Leveraging through partnerships – working with and through others to build upon and expand U.S. efforts.

U.S. activities will be focused in six key areas:

- **Governance:** Strengthening the role of institutions at the local, national, and regional levels to optimize the benefits from water among its potential uses and developing a supportive environment for private sector participation.
- **Mobilization of domestic resources**: Promoting sound utility management and cost recovery, and using innovative approaches to support investment by the private sector.

- **Infrastructure investment:** Investing in both large and small-scale infrastructure to increase access to basic services and improve water management.
- **Protection of public health:** Advancing improved hygiene activities including the most suitable disinfection method (including point-of-use technologies), safe water storage, hand washing, and household sanitation.
- **Science and technology cooperation:** Advancing the state-of-art knowledge in areas related to water management including pollution prevention, satellite remote sensing, global information systems, and modeling.
- **Humanitarian assistance:** Providing basic services in response to natural disasters and human-caused catastrophes abroad in addition to prevention, preparedness and mitigation measures to lessen impact of recurrent disasters.

In addition, a number of areas have been identified for further consideration including increasing access for the poor, improving sanitation and wastewater treatment, addressing urban and peri-urban issues, and adapting to climate variability.

While the new Director of Foreign Assistance (DFA) is currently identifying priority countries for U.S. assistance, a number of countries and basins were identified as examples of where activities in these focal areas could be carried out. These include Afghanistan, Bangladesh, Columbia, Egypt, Ethiopia, Haiti, India, Indonesia, Kenya, Nepal, Pakistan, Philippines, Somalia, Sudan, Uganda, the Nile Basin, and the Okavango Basin.

Over the next year, the U.S. Department of State, working closely with USAID and other U.S. technical agencies, will begin to develop metrics for measuring progress, identifying priority countries, and developing timelines for projects and programs. The Office of the Director of Foreign Assistance is expected to play an important role in coordinating and integrating U.S. water and sanitation assistance programs with other U.S. development programs as well as with programs of other donor countries and entities.

This report contains an introduction, an outline of the global water situation, the U.S. foreign policy context, past and current USG activity in the sector, and a strategy for moving forward. Annex A provides an overview of U.S. Agencies working on water; Annex B provides an overview of USAID funding on water. As examples of how some of these water issues may be raised in regional and country-level strategies, Annex C presents more information on strategic planning of USAID's water and sanitation activities in Africa; Annex D provides the ECO Asia strategy for USAID's regional mission in Bangkok; and Annex E provides the recently-developed Blue Revolution Initiative by USAID's Bureau for Asia and the Near East.

1. Introduction

President Bush signed the Senator Paul Simon Water for the Poor Act of 2005 (the Act) on December 1, 2005. The act emphasizes the provision of affordable and equitable access to safe water and sanitation in developing countries as a component of U.S. foreign assistance programs. It requires the Secretary of State, in consultation with the U.S. Agency for International Development (USAID) and other U.S. Government (USG) agencies, to develop a strategy "to provide affordable and equitable access to safe water and sanitation in developing countries" within the context of sound water management. It also requires the Secretary of State, in consultation with the USAID Administrator, to submit a report describing that strategy not later than 180 days after the date of enactment of the Act, as well as an initial report "on efforts that the United States is making to support and promote programs that develop river basin, aquifer, and other watershed-wide mechanisms for governance and cooperation."

This document responds to that requirement by developing a series of principles for guiding U.S. activities on water as well as identifying key focal areas for future work. The strategy reflects the U.S. foreign policy context in which international water sector activities are carried out. It is informed by decades of on-the-ground experience of USAID, other federal agencies and donors, and includes the input of a broad range of consulted stakeholders. It also takes into consideration processes under development by the new Director of Foreign Assistance (DFA) to integrate development assistance efforts. This report is not the end, but rather the first step in a long-term process to develop and implement an international water strategy.

1.1 Overview

Section 2 of this report outlines the global water situation and describes major water trends around the world, as well as current international policy and investment patterns in the sector. Section 3 describes the U.S. foreign policy context that provides the foundation for all U.S. Government (USG) work in international water, while Section 4 outlines past and current USG activity in the sector including coordination with others. A strategy for moving forward is outlined in Section 5. Annex A provides an overview of U.S. Agencies working on water; Annex B provides an overview of USAID funding on water. As examples of how some of these water issues may be raised in regional and country-level strategies, Annex C presents more information on strategic planning of USAID's water and sanitation activities in Africa; Annex D provides the ECO Asia strategy for USAID's regional mission in Bangkok; and Annex E provides the recently-developed Blue Revolution Initiative by USAID's Bureau for Asia and the Near East. The last two annexes are region-specific strategies that support the broad goals and objectives discussed in this report. Work on Annexes D and E began independently of the enactment of the Paul Simon Water for the Poor Act of 2005.

The Act also requests a report on Water for Peace and Security that describes U.S. efforts to support and encourage watershed management and cooperation at the basin level. These issues are described here and will not be presented separately.

1.2 Methodology

The development of this strategy was coordinated by the U.S. Department of State (DOS) in close consultation with USAID. The framework draws upon a wealth of existing information, including well-respected sources of data in the public domain about international water issues and realities. It is supplemented by internal USG documentation produced by numerous federal agencies engaged in the international water sector over the last few years. Key donors, private sector, and civil society actors were also consulted about their current programs and priorities, and about ways the USG might effectively coordinate with others.

Written documentation was supplemented by extensive consultation with informed USG technical experts. The intent is to provide a comprehensive picture of current programs and strategies, and a broad range of opinions about the best approaches for moving forward.

To further complement USG analysis and documentation, the Department of State organized a public outreach strategy to solicit input from a broad range of partners and stakeholders interested in international water issues. An official public meeting was hosted in Washington, D.C., on April 19, 2006, and written comments accepted until April 30, 2006. Notification of the meeting as well as the address for sending comments was posted in the Federal Register on March 29, 2006. More than 100 people attended the public meeting and 35 written comments were received from a range of stakeholders including international organizations, the private sector, foundations, nongovernmental organizations and faith-based groups. These comments were reviewed by USG experts and policymakers for consideration. A transcript of the public meeting is posted at www.state.gov/g/oes/water.

2. Summary of the Global Water Situation

Access to safe water and adequate sanitation are essential to human health. Sound water management can decrease disease and improve human health, promote agricultural and industrial development, foster sustainable economic growth, and help to preserve land, coastal, and marine ecosystems. Water can either be a cause of conflict or a promoter of peace, and a means for developing transparent, democratic participatory processes and governments that are accountable to the needs of their citizens. There are growing concerns that contention over water may become a source of conflict. While current global conditions represent a challenge, work on water and sanitation presents an opportunity to create a healthier, more prosperous and just global community.

2.1 Quantity of available fresh water

Although there is an enormous amount of moisture in the biosphere, the portion of the planet's water readily available to people in freshwater lakes, rivers, and streams equals less than one percent of the total (0.07%)[1]. In addition, there is considerable variability in where that water is located, and when it is available over the course of seasons or years, resulting in scarcity for many and overabundance and flooding for others.

Water stress is defined as 1000-1700 cubic meters of water available per person per year, the level at which water supply problems tend to become chronic and widespread. Annual per capita water supply below 1000 cubic meters is defined as water scarcity, where chronic water shortages can adversely affect human health, economic development, and environmental sustainability. Research estimates that the number of people living in conditions of water stress or scarcity ranges from 434 million[2] to two billion[3], depending on how numbers are aggregated across regions. People with limited access to water also tend to have access to lower quality water.

Water resource availability and location are also greatly affected by variability in the earth's weather and climate, including inter-annual and seasonal climate variations associated with the El Niño/Southern Oscillation (ENSO). Added to this, the largely undetermined impacts of climate change on patterns of precipitation, evapotranspiration, and global sea levels may result in an uncertain and erratic water resource future in many places. Natural disasters related to hydrometeorological phenomena (droughts, floods and storms) are also expected to increase in frequency and severity in many places, affecting large numbers of people and causing as much as $300 billion of damage annually by the year 2050 if serious disaster mitigation and adaptation measures are not taken[4].

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[1] World Health Organization. *Protection of the Environment: Health in Water Resources Development, n/d.* (website: www.who.int/water_sanitation_health/vector/water_resources.htm).
[2] Engelman, Robert, with Richard P. Cincotta, Bonnie Dye, Tom Gardner-Outlaw and Jennifer Wisnewski. (website: www.populationaction.org/resources/publications/peopleinthebalance/index.shtml).
[3] Vorosmarty, Charles J., Green, Pamela, Salisbury, Joseph, and Lammers, Richard B. 2000. *Global Water Resources: Vulnerability from Climate Change and Population Growth.* Science: 284-288.
[4] Stockholm Environment Institute, IUCN, IISD. 2001. Coping with Climate Change: Environmental Strategies for Increasing Human Security (Source: MunichRe and UNEP).

World population growth in the next 15 years is expected to greatly increase the competition for water as well as food produced by irrigation. Total global water withdrawals (annual quantity of water withdrawn for agricultural, industrial and domestic purposes) are projected to increase by 22 percent in 2025 above 1995 withdrawals. Projected withdrawals in developing countries will increase 27 percent over the 30-year period, while developed-country withdrawals will increase by 11 percent[5]. Depending on future population growth scenarios of the United Nations (UN), between 2.6 billion and 3.1 billion people may be living in either water-scarce or water-stressed conditions by 2025[6]. A report from the International Water Management Institute (IWMI) predicts that water shortages will affect 2.3 billion people, or 30 percent of the world population, in 48 countries in 2025[7]. An additional one billion are expected to face water scarcity by the year 2025 due to increasing population, global climate change and other factors[8]. Shifting global demographics and economics lead to new and competing needs for water. For example, the 70 percent of available freshwater currently consumed by the agricultural sector worldwide will increasingly be needed for urban and industrial development, or called upon to maintain fisheries and other in-stream ecosystem services. At the present time, numerous important aquifers around the world are being "mined" at alarming rates far beyond natural recharge.

2.2 Quality of available fresh water

Microbial waste in water resources, primarily from fecal contamination, continues to be a concern in both developed and developing countries[9]. Some experts estimate that up to 90 percent of wastewater is discharged without treatment in developing countries[10], with increasing use of urban wastewater in agriculture and use of sewage to feed fish[11]. In addition to point source pollution from sewage systems, industrial and mining effluents, and other factors, the impacts of non-point (dispersed) source pollution from agricultural chemicals, urban runoff, and poor land practices are only beginning to be recognized worldwide. In developed countries like the United States, these non-point sources are considered to account for most of the current pollution of surface freshwater and estuarine waterways. Thermal pollution, caused by industry discharge and fragmentation of rivers by dams and reservoirs, is leading to changes in water chemistry, biodiversity, and quality. The loss of arable lands and freshwater salinization from excessive irrigation is also a serious issue in many areas such as West Asia[12].

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[5] Rosegrant, Mark W., Cai, Ximing, and Cline, Sarah A. 2002. Global Water Outlook to 2025: Averting an Impending Crisis. International Food Policy Research Institute/International Water Management Institute, Washington, D.C. and Colombo, Sri Lanka.

[6] Engelman, Robert, with Richard P. Cincotta, Bonnie Dye, Tom Gardner-Outlaw and Jennifer Wisnewski. 2000. (website: www.populationaction.org/resources/publications/peopleinthebalance/index.shtml).

[7] IWMI. 2000. *Water supply and demand in 2025*. Colombo, Sri Lanka.

[8] Vorosmarty, Charles J., Green, Pamela, Salisbury, Joseph, and Lammers, Richard B. 2000. *Global Water Resources: Vulnerability from Climate Change and Population Growth.* Science: 284-288.

[9] UN. 2005. Water: A Shared Responsibility: The United Nations World Water Development Report 2.

[10] UNDP, UNEP, the World Bank, and the World Resources Institute. 2000. World Resources 2000-2001. Washington, D.C..

[11] UN. 2005. Water: A Shared Responsibility: The United Nations World Water Development Report 2.

[12] United Nations Commission on Sustainable Development. 1997. Comprehensive Assessment of the Freshwater Resources of the World.

Pollution of groundwater sources, a prime source of potable water in many locations, is a growing and largely undocumented problem. Once contaminated, these sources are extremely difficult and costly to clean up. Over extraction by humans can create or exacerbate groundwater quality problems, including saltwater intrusion in coastal zones, and arsenic, fluoride and other natural mineral contamination in other areas.

Ecosystems provide critical services that are becoming progressively more limited. Aquatic ecosystems and species are deteriorating rapidly in many areas which can undermine the livelihoods of some of the world's most vulnerable communities by reducing protein sources for food, the availability of clean water and the potential for income generation. Freshwater ecosystems are increasingly at risk from water diversion and consumption for human use, as well as habitat conversion and land cover change. While global-scale data is insufficient to fully document the extent of wetland and associated coastal ecosystem loss around the world (especially in developing countries), evidence from specific cases is dramatic. For example, the volume of water in the Central Asian Aral Sea basin has been reduced by 75 percent since 1960 due mainly to large-scale upstream diversions of the Amu Darya and Syr Darya rivers for irrigation. Coastal ecosystems have likewise been affected, with about 35 percent of mangroves lost over the last two decades (in those countries with reporting data)[13]. 60 percent of the world's 227 largest rivers are strongly to moderately fragmented by dams, diversions and canals[14]. Declines in regional precipitation and a large increase in irrigated agriculture have reduced the surface area of Lake Chad in Africa by 95 percent in the past 35 years[15].

2.3 Access to water supply and sanitation services

Global statistics related to equitable and sustainable access to clean water and sanitation services and the associated health and economic dimensions of human welfare reveal a daunting problem. The World Health Organization-UN Children's Fund (WHO-UNICEF) Joint Monitoring Program reports that, between 1990 and 2002, global access to improved drinking water sources rose from 77 to 83 percent, but 1.1 billion people are still without access to an improved drinking water source[16]. Global sanitation coverage rose from 49 percent in 1990 to 58 percent in 2002, but 2.6 billion people still lack any improved sanitation facilities[17].

To achieve the internationally agreed goals on water and sanitation by 2015, an additional 1.2 billion people, or 260,000 people every day, will need access to safe water from 2002 to 2015. At least 1.8 billion will require sanitation from 2002 to 2015, or 350,000 new people per day. Most regions are on track to meet the safe water target. A major exception is Sub-Saharan Africa, where over 300 million people lack access to safe water and even more to basic sanitation.

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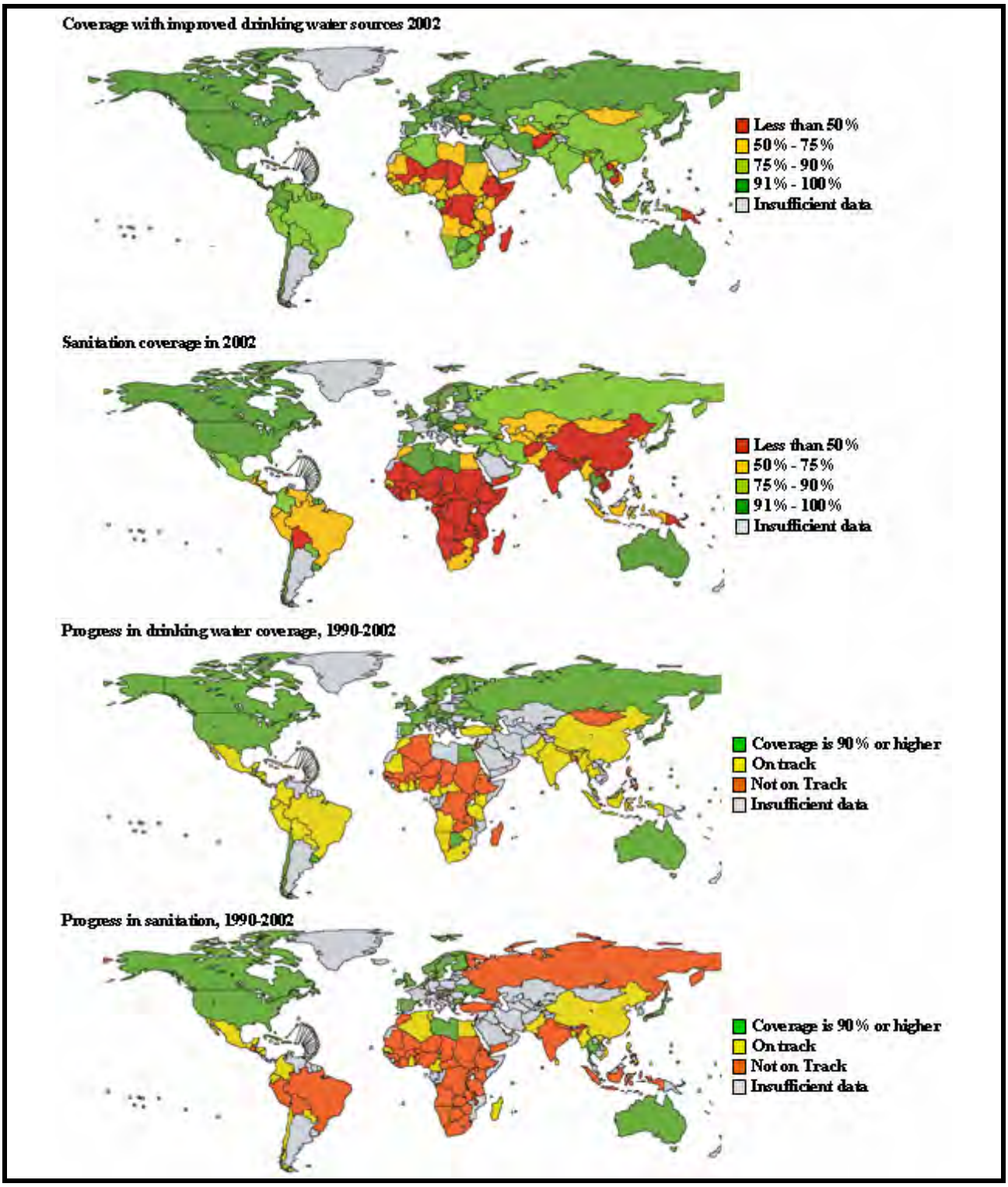
[13] UNESCO. 2005. "Did You Know?" UNESCO Water Portal Weekly Update.
[14] Ibid.
[15] UNEP. 2005. One Planet, Many People: Images of Africa's Changing Lakes.
[16] An improved drinking water source is defined as one that is likely to provide "safe" water, such as a household connection, a borehole, public standpipe, protected dug well, protected spring, or rainwater collection. The overall coverage figures include a wide variety of service delivery levels.
[17] An improved sanitation facility is defined to include connection to a public sewer, connection to a septic system, pour-flush latrine, simple pit latrine, or ventilated improved pit latrine.

Figure 2.1. Access to improved drinking water, improved sanitation, and progress towards achieving the internationally agreed goals on water and sanitation.[18]



[18] WHO/UNICEF, 2004

2.4 Financial needs

The total costs of meeting the 2015 targets will depend on the type and level of service provided, and the strategies employed to reduce the service deficit. The choice of countries, the urban-rural balance of the target group, the specific sub-populations involved, and the technologies and service standards applied will all have a significant bearing on actual costs to meet these goals. Estimates of the actual level of resources needed vary widely, depending on differing definitions for 'safe' water and 'basic' sanitation, lack of reliable data on the baseline in many countries around the world, and other differences in methods or assumptions of calculation.

Using the most basic standards of service and technology, the WHO-UNICEF Joint Monitoring Program estimates that the 2015 goals could be attained at an extra annual global investment cost of about $10-12 billion[19]. However, according to a panel chaired by Michel Camdessus (former Managing Director of the International Monetary Fund) convened prior to the Third World Water Forum in Kyoto, Japan, providing full water and sewerage connections and primary wastewater treatment to unserved urban populations would raise the annual cost of the 2015 goal to $17 billion for water and $32 billion for sanitation and sewerage, or a total of $49 billion annually[20].

Truly sustainable systems for water supply and sanitation will require going beyond water supply and sanitation alone. Estimates on needed investments to meet the full range of water needs by 2025 — including agriculture, environment, energy, and industry, as well as water supply and sanitation — vary even more widely, but in all cases are dramatically higher than for water supply and sanitation alone. In 2000, the World Water Commission estimated that about $180 billion would be required each year in new investments, not including operations, maintenance, or repairs[21].

Box 2.1: International Donors and the Water Sector

In recent years total aid allocations have averaged about $3 billion a year. Official Development Assistance for water supply and sanitation remained relatively stable in the 1990s, at about 6% of overall bilateral aid and 4-5% of multilateral aid.

Although virtually all major donors invest at least to some degree in water resources management, worldwide the water sector is dominated by a handful of donors. From 1999-2001, Japan was the largest investor in the water supply and sanitation subsector, accounting for about one-third of total aid to this category (35%). Activities funded by six other donors added up to a further 45%: the World Bank's International Development Association (IDA) (11%), Germany (11%), United States (8%), France (5%), the United Kingdom (5%), and the European Commission (5%).

Current sources of financing for water investments are drawn from a mix of several sources, including[22]:

[19] WHO/UNICEF Joint Monitoring Programme. 2004. Meeting the MDG Drinking Water and Sanitation Target: A Mid-Term Assessment of Progress.
[20] World Panel on Financing Infrastructure, Michel Camdessus, Chair. 2003. Financing Water for All.
[21] World Water Commission. 2000. World Water Vision: A Water Secure World. The Hague. Also: Global Water Partnership. 2000. Towards Water Security: A Framework for Action. The Hague.
[22] Global Water Partnership. 2000. Towards Water Security: A Framework for Action. The Hague. Alternative estimates for the water supply and sanitation subsector only were provided by the World Panel on Financing Infrastructure (2003) based on analysis in the mid-1990s, where financing sources were assessed to be domestic

- Domestic public sector financing at the national or local level (from taxes, user fees, public debt, etc.) [64% of total expenditures];
- Direct investments from domestic private sources [19% of total expenditures];
- Direct investments from international private sources [5% of total expenditures]; and
- International sources of support and cooperation (including multilateral and bilateral Official Development Assistance (ODA)) [12% of total expenditures]. (See Box 2.1.)[23]

2.5 The international policy framework on water

The international community's approach to addressing water and sanitation issues has evolved markedly over the last few years, moving from the identification of goals and targets to implementation. The U.S. has played a major role in this shift by moving both formal intergovernmental meetings and informal global events on water away from negotiating new international norms, or developing new global institutions. The focus is now increasingly on the exchange of best practices and lessons learned and on developing partnerships and programs to scale-up proven approaches.

2.5.1 Major international events on water

2002: The World Summit on Sustainable Development (Johannesburg). Countries reached consensus on the Johannesburg Plan of Implementation (JPOI) which identifies goals and targets on sustainable development. Three water-related targets were agreed to: "…to halve, by 2015, the proportion of people unable to reach or afford access to safe water…"; "…to halve, by 2015, the proportion of people without access to basic sanitation…"; and to "…develop integrated water resources management and water efficiency plans by 2005…" Another key outcome of the meeting was the launch of several partnerships (including the "Water for the Poor Initiative" and the U.S.-Japan "Water for People" – both launched by the U.S.). This was the first UN meeting where "partnerships" were recognized as a formal outcome.

2003: The Group of Eight (G8) Summit (Evian). The G8 agreed to an action plan which highlighted good governance, cost recovery, market-based approaches for distributing point of use disinfection technologies, capacity building and the mobilization of domestic resources.

2004-2005: The 12th and 13th Sessions of the UN Commission on Sustainable Development (New York). Water, sanitation, and human settlements were the theme of the first two-year

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public sector 65–70%, domestic private sector 5%, international donors 10–15%, and international private companies 10–15%.

[23] Overall donor estimates in Box 2.1 uses the DAC definition of water supply and sanitation, which includes activities related to water resource policy, planning and programs, water legislation and management, water resource development and protection, water supply and use, sanitation, and education and training when associated with an activity that is primarily water supply and sanitation. Dams and reservoirs used for irrigation and hydropower, aid to the water sector extended within multi-sectoral programs, direct budgetary support, and loans are not included in this estimate. Source for Box 2.1: Tearfund. 2004. Making Every Drop Count: An Assessment of Donor Progress Towards the Water and Sanitation Target. Middlesex, UK.

cycle of the UN Commission on Sustainable Development (CSD). The 12th Session focused on developing a portfolio of non-negotiated "policy options and practical measures" – a list of proven approaches governments could choose from to advance efforts to reach the internationally agreed goals on water. CSD 12 and 13 also introduced innovative features to build capacity and develop partnerships. Building on the model established by the "Institute@" - a U.S. initiated expert-to-expert training partnership – the CSD "Learning Center" provided on site capacity building to over 1000 CSD 12 and 13 participants..

2005: Stockholm Water Week. The largest annual gathering of international water experts added partnership meetings to the regular suite of technical sessions in order to allow groups to expand their activities and bring in new partners.

2006: The 4th World Water Forum (WWF). The largest international event on water, close to 20,000 people attended the Forum, including over 70 ministers. The theme was "local action." For the first time, no text negotiations were held at the Forum. Other *firsts* include an "Institute@" at the WWF as well as partnership meetings. In response to a decision taken at CSD 13, the UN launched a web-based tool to facilitate the exchange of best practices and lessons learned based on the portfolio of "policy options and practical measures".

2.5.2 General international themes

Over the past few years there has been a general recognition that the solution to water and sanitation challenges lies in encouraging action at the local, national and regional/basin levels – not in global policies or global institutions. A number of key themes important to building sustainable and long-term progress have emerged[24]:

- **Governance: Managing water effectively.** Governments have a primary responsibility in meeting basic water and sanitation needs. Governments must prioritize water and sanitation in national development plans and strategies; develop processes that advance integrated water resources management and ensure coordination among ministries with different responsibilities for managing water; ensure public participation in decision making; establish policies that ensure the needs of the poor – and the special needs of women and children – are met; and cooperate with neighboring governments on the management of shared resources.

- **Governance: Creating an enabling environment.** Domestic good governance is also critical to creating a sound investment climate. This includes, but is not limited to, raising the priority of water and sanitation in national development plans and strategies; developing national policies that set clear goals for the water sector; providing the transparent legal framework for planning, and developing financing for projects; putting in place accountable fiscal systems that are supportive of country priorities, such as

[24] See the "G8 Water Action Plan," adopted at the G8 Summit in Evian (2003); the "Bonn Keys" developed at the International Conference on Freshwater (2001); the Johannesburg Plans of Implementation adopted at the World Summitt on Sustainable Development (2002); the Ministerial Declarations of the 2nd, 3rd, and 4th World Water Forums (2000, 2003, 2006); the "Matrix of Policy Options and Practical Measures" developed at CSD 12; the decisions adopted at CSD 13; and the UN Millennium Development Task Force Report on Water and Sanitation.

public infrastructure; promoting public participation in decision-making; ensuring transparency and accountability of utilities and regulatory authorities involved in service provision; decentralizing responsibility, as well as revenue collection authority, to the lowest appropriate levels, and creating institutions capable of managing water and sanitation services; and developing cross-subsidies and tariff structures that ensure the needs of the poor can be met.

- **Integrated Management.** Water should be managed in an integrated manner at all levels (community, local, national, and regional/basin). This means managing water to optimize its benefits among competing uses while considering environmental and human needs that must be addressed to achieve sustainability.

- **Gender Considerations.** Policies and institutions must be responsive to the different needs and priorities of both men and women and include them in the decision process.

- **Local Ownership.** Explicitly involving communities in the decision-making process can increase project effectiveness and improve its sustainability.

- **Utility Reform.** Utilities should recover costs and operate in a sound, transparent manner with full public participation; public-private partnerships should be supported and be done in full consultation with the public.

- **Financing.** Resources should be mobilized from all sources for sustainable and bankable projects. Innovative approaches – such as loan guarantees, pooled funds, and revolving funds – should be expanded; local financing options should be improved; financing should be made available at the lowest appropriate level.

- **Water efficiency and productivity.** Technologies should be employed and capacity built to reduce water use; reduce water waste; and increase the productivity of products (food in particular) derived from water.

3. The U.S. Foreign Policy Context

President Bush has said, "Persistent poverty and oppression can lead to hopelessness and despair. And when governments fail to meet the most basic needs to their people, these failed states can become havens for terror … Development provides the resources to build hope, prosperity, and security."[25] Access to basic water and sanitation services as well as the processes involved in ensuring sound management of water resources are a key part of achieving U.S. foreign policy goals.

3.1 Advance human health

The human health consequences of unsafe water and poor hygiene are severe. At any given point in time, 50 percent of the world's hospital beds are occupied by people suffering from illnesses related to water[26]. An estimated 1.8 million deaths annually are caused by diarrhea linked to unsafe water, sanitation, and hygiene, accounting for around 17 percent of all causes of mortality for children under five years old in developing countries[27]. Water can contribute to disease in four ways[28]: **waterborne** diseases caused by water directly contaminated with pathogens (i.e., cholera, typhoid, dysentery, and other diarrheal diseases); **water-washed** diseases caused by inadequate hygiene typically due to insufficient quantities of domestic water (i.e., trachoma); **water-based** diseases caused by direct contact with or ingestion of an aquatic host in which a parasite spends part of its lifecycle (i.e., guinea worm, schistosomiasis) or the ingestion of water contaminated with natural or man-made toxins, pesticides, or chemicals (i.e., arsenic, mercury); and **water-related** diseases caused by parasites borne by insect vectors, especially mosquitoes, that breed in water (i.e., malaria and Dengue fever).

Personal hygiene, sanitary excreta disposal, access to safe drinking water, and proper household water management (including safe storage) can prevent most diarrheal diseases. Among water-related diseases, by far the greatest source of mortality is malaria, which killed an estimated 1.3 million people in 2002[29], again mainly young children (programs to reduce malaria will not be considered in this report). Effective management of water resources can help minimize potential breeding sites for insects that contribute to water-related diseases. Toxicants in water can also cause disease. For example, natural or anthropogenic arsenic contamination of drinking water is causing arsenosis to tens of millions, mostly in southeast Asia, leading to skin tumors and some forms of cancers, whereas excessive natural fluoride in drinking water is causing dental and crippling skeletal fluorosis to several million people in southeast Asia, Africa and elsewhere[30]. Groundwater contaminated with pesticide and fertilizer runoffs can affect endocrine systems[31]. Leaded pipes can contribute to lead poisoning, which can cause mental retardation and increases

[25] President George W. Bush of the United States, March 14, 2002, as quoted in the UN Millennium Project Report. 2005. Investing in Development: A Practical Plan to Achieve the Millennium Development Goals.
[26] UNEP.
[27] WHO. 2005. World Health Report 2005. Geneva. (http://www.who.int/home/.)
[28] Gleick, Peter H. 1998. The World's Water: The Biennial Report on Freshwater Resources, 1998-1999. Island Press: Washington, D.C.
[29] UN. 2005. Water: A Shared Responsibility (The United Nations World Water Development Report 2).
[30] WHO Fact Sheet. 2006. Fluoride and Arsenic in Drinking Water. (http://www.who.int/ceh/publications/en/08fluor.pdf.)
[31] http://www.epa.gov/scipoly/oscpendo/edspoverview/primer.htm.

blood pressure. In developing countries, there are limited resources for detecting and remediating these forms of contamination.

3.2 Promote economic productivity and improve water management

Mismanagement of water resources has a number of costs that can contribute to poverty and undermine long-term economic growth. These include the economic costs of health consequences from unsafe water, inadequate sanitation, and poor hygiene; damages and deaths due to water-related natural disasters; poverty and malnutrition due, in part, to the lack of water for productive purposes (primarily in agriculture); and environmental impacts due to reduced water availability and pollution.

Direct health-related costs, lowered worker productivity and greater absenteeism due to illness, time and opportunity costs associated with long distances to access water services, and the resulting reduced attendance at school all lead to significant socioeconomic impacts that impede development. Diarrhea alone accounts for the annual loss of around 62 million disability-adjusted life years (DALYs), a standard measure of the burden of disease calculated from the number of years of productive life lost due to illness and premature mortality. By comparison, malaria leads to a loss of 47 million DALYs and tuberculosis 35 million DALYs per year[32]. India alone loses 73 million working days per year due to the lack of clean water and inadequate sanitation[33]. The World Health Organization estimates that by meeting the internationally agreed goals on water and sanitation would save nearly $90 billion annually[34]. Research estimates that each dollar invested in water supply and sanitation could yield $3 to $34 in return[35].

In developing countries, agriculture accounts for 70 percent or more of the water withdrawals[36]. When it rains, economies can grow; when it doesn't, those countries that lack the capacity to store and save water experience economic decline and food insecurity (see Figure 3.1). Experts predict that world food demand may double by 2050[37]. Not only will countries have to increase the agricultural productivity of existing lands, but do it with less water. Managing water to ensure long-term availability in light of climate variability will be critical to reaching these goals.

Water-related infrastructure for energy production, flood protection, and long-term water management has also contributed to economic growth of many countries around the world. In Kenya, El Niño floods in 1997-98 caused damages estimated at 11 percent of GDP; La Niña droughts in 1998-99 and 1999-2000 caused damages estimated at 16 percent each year[38]. Since the 1920s, the United States has invested approximately $200 billion on flood management and

[32] Hutton, G, and L. Haller L. 2004. *Evaluation of the costs and Benefits of Water and Sanitation Improvements at the Global Level*, World Health Organization Report, Geneva.
[33] UNDP.
[34] Ibid, 77.
[35] Ibid.
[36] UN Economic and Social Council. 2005. "Freshwater Management: Policy options and possible actions to expedite implementation", Report of the Secretary General of the United Nations 17/2005/2.
[37] Thompson, Robert L. 2006. Presentation to the Atlantic Council, April 18, 2006.
[38] Ibid 82.

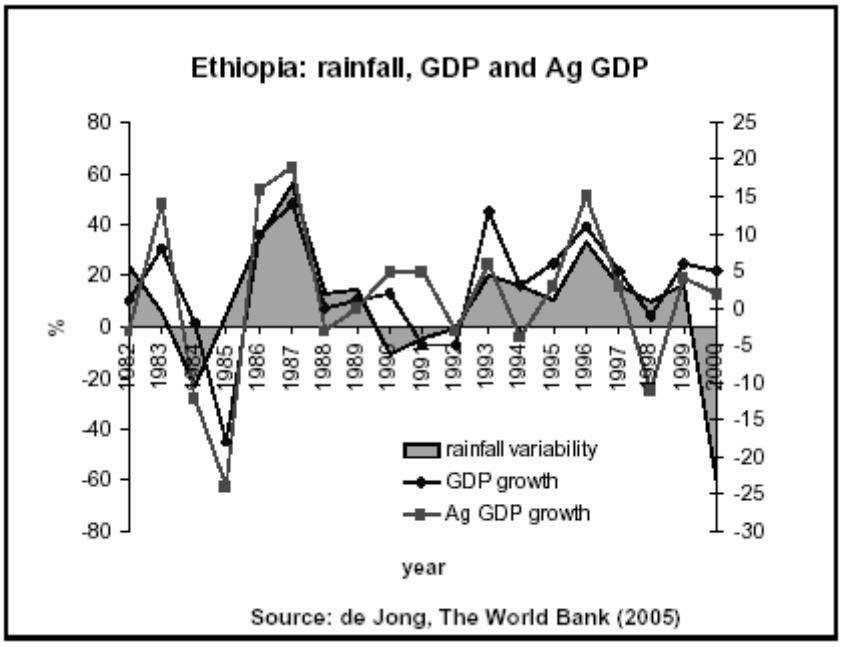


Figure 3.1: GDP in Ethiopia has closely tracked rainfall between 1982 and 2000.

mitigation, yielding over $700 billion in benefits, and limited flood damages to less than 0.5 percent of the GDP[39]. Ethiopia is currently building or discussing dams that would not only meet Ethiopia's needs, but provide power for export.

Water pollution can reduce economic growth. For example, in the Philippines, a country where more than 80 percent of the people have access to improved water sources and adequate sanitation, 58 percent of the country's groundwater is contaminated and the economic losses associated with pollution's impact on human health, fisheries, and tourism are estimated at $1.3 billion per year[40].

Appropriate water quantity and quality both depend on and help secure the sustainability of ecosystems upon which human societies and economies rely today and in the future. Sustainable water resources management has significant implications for promoting economic growth and agricultural productivity worldwide, and can yield concrete benefits for U.S. private sector abroad.

When water supply systems are deficient, the poor suffer the economic consequences more than other segments of the population; typically paying a unit cost for water supply through informal networks and distributors that is ten to twenty times higher than those who have access to a piped system. The water is often of questionable quality. An extreme case is Delhi (India), where the price for a cubic meter of water through a house connection is $0.01 versus as much as $5 through an informal vendor[41].

[39] Ibid.
[40] The World Bank. 2003. The Philippines Environment Monitor 2003.
[41] UNESCO. 2005. "Did You Know?" UNESCO Water Portal Weekly Update. July 2005.

3.3 Strengthen regional stability and build just, democratic, and responsive institutions

Competition for scarce water resources is becoming an increasing source of tension at the local, national and regional level.[42] While national level conflict is extremely rare, numerous conflicts at the local level have been reported.[43] The CIA reports that, by 2015, nearly half of the world's population will live in countries that are water-stressed (i.e., have less than 1,700 cubic meters per capita per year).[44] More than 260 basins are shared by two or more countries.[45] As resources continue to decline, we expect tensions may increase. At the same time, water has the power to bring people and countries together.[46] Cooperation by the Nile riparian countries on water has led to regular discussions among the countries at both the technical and political levels. A number of benefits – some of which go "beyond" the river such as greater trade and stronger government relations – are being realized.[47]

A key hallmark of a responsive government is whether it can provide basic services to its people while balancing the needs of various stakeholders and environmental sustainability. Governments that work to meet these needs find it useful to develop institutions and public/private partnerships that are accountable to the people and operate with greater transparency and stronger public participation. Activities in water supply and sanitation support transformational development and help strengthen rebuilding or developing states by improving governance, strengthening national enabling environments and institutions, mitigating local and national conflict over water resources, and providing water-related services for displaced or returning populations. The U.S. believes providing these basic services is a way for governments to demonstrate their commitment to the people by developing a government that can work for the people to meet their needs in an open and participatory manner. Such interventions help states move towards becoming more stable, prosperous, and democratic societies.

3.4 Provide humanitarian assistance

Provision of humanitarian assistance directly supports the U.S. national security strategy to advance freedom, protect human rights and promote human dignity. Humanitarian assistance provided by the U.S. supports immediate, life-sustaining needs by providing basic services, including clean water, sanitation, emergency health care, shelter, and food. The U.S. government's commitment to humanitarian assistance is a tremendously valuable force for preventing or mitigating the effects of conflict, fostering stability, and laying the groundwork for

[42] There is an extensive literature on the subject of water and conflict. Seminal references include Gleick, Peter H., 1993, *Water and Conflict: Fresh Water Resources and International Security*, International Security 18 (1): 79-112; and Wolf, Aaron T., 1998, *Conflict and Cooperation Along International Waterways*, Water Policy 1: 251-265.
[43] Ibid.
[44] Global Trends 2015.
[45] Postel, Sandra L., and Aaron T. Wolf. 2001. *Dehydrating Conflict*, Foreign Policy, September 18, 2001.
[46] See Wolf, 66.
[47] Sadoff, Claudia W. and David Grey 2002. *Beyond the river: the benefits of cooperation on international rivers*, Water Policy 4 (5): 389-405.

reconstruction, sustainable development and good governance. Such assistance is critical both to achieving transformational diplomacy and sustainable development. It is also a reflection of U.S. humanitarian values and can help build goodwill for the United States abroad.

4. USG International Water-Related Activities[48]

In Fiscal Year (FY) 2003-2005, more than $1.7 billion in official development assistance was obligated for over 100 activities in developing countries around the world. Over 24 million people received improved access to safe drinking water, and over 26 million people received improved access to sanitation. The U.S. also contributes to a number of multilateral development banks (such as the World Bank, the African Development Bank and the Inter-American Development Bank) and international organization (such as the UN, the Global Environment Facility, and the Organization of American States) that work on water. In addition, the United States provides nearly $40 million per year to support three bi-national commissions – the Border Environment Cooperation Commission, the International Boundary and Water Commission, and the International Joint Commission – that manage a number of transboundary water-related programs with Mexico and Canada.

4.1 U.S. Federal Agency involvement in the international water sector

Over 15 U.S. federal agencies are involved in international water issues. In addition to the international agencies, several domestic agencies have a legislative mandate to work on international water issues including the Department of Agriculture (USDA), the Environmental Protection Agency (EPA), the Centers for Disease Control (CDC), the National Oceanographic and Atmospheric Agency (NOAA), and the U.S. Army Corps of Engineers (USACE). A few

Table 4.1: U.S. Federal Agencies Working on International Water-Related Activities

International Agencies	Domestic Agencies
African Development Foundation*	Department of Agriculture
Department of State*	➢ Foreign Agricultural Service
Millennium Challenge Corporation*	➢ Agricultural Research Service
Overseas Private Investment Corporation*	➢ National Resource Conservation Service
Peace Corps*	➢ U.S. Forest Service
U.S. Agency for International Development*	Department of Commerce
U.S. Trade and Development Administration*	➢ National Oceanic and Atmospheric Administration
Overseas Private Investment Corporation	Department of Defense
Export-Import Bank of the United States	➢ U.S. Army Corps of Engineers*
U.S. Department of Treasury	Department of Energy
	Department of Health and Human Services
	➢ Centers for Disease Control and Prevention
	Department of the Interior
	➢ U.S. Bureau of Reclamation
	➢ U.S. Fish and Wildlife Service
	➢ U.S. Geological Survey
	Environmental Protection Agency
	Federal Emergency Management Agency
	National Aeronautics and Space Administration
	National Science Foundation

* Denotes those agencies receiving direct appropriations for working on international water activities.

[48] Data for this section was obtained from the GAO's report to Congress on "Freshwater Programs: Federal Agencies' Funding in the United States and Abroad" (GAO-05-253; 2005) or through surveys conducted by the Department of State with the individual agencies.

Table 4.2: Estimated Financial Support for Major U.S. Funders of Freshwater Programs Abroad Fiscal Year 2005[a]. Each agency listed provided its own data.		
Department or agency	**All Water**	**Excluding Iraq and Afghanistan**
Department of Defense[b]	$208.3M	$3.4M
Environmental Protection Agency[c]	$79.3M	$79.3M
Millennium Challenge Corporation	$89.9M	$89.9M
U.S. Agency for International Development	$479.1M	$397.7M
Department of State	More than $36M	More than $36M
Total	**More than $890M**	**More than $600M**

[a] The U.S. also provides loans, guarantees, and insurance for water projects. The amount of these investments can vary widely from year to year. Since 2002, the Export-Import bank has provided loans totaling from $0-$164M per year. In 2005, the Overseas Private Investment Corporation provided over $200M in loan guarantees and an additional $4M in direct loans.

[b] Funds come from the Commander's Emergency Response Program and Overseas Humanitarian, Disaster and Civic Aid.

[c] This includes approximately $66 million earmarked for infrastructure assistance along the Mexican border and approximately $13 million for work on the Great Lakes.

domestic agencies receive direct appropriations to work on international water, including USDA and USACE. Many of these, as well as the remainder of U.S. agencies that work on water, receive support from other domestic and international sources such as USAID and the Department of State. The U.S. Trade and Development Administration funds feasibility studies and technical assistance for the development of water services and wastewater treatment, flood control, drought relief, and other emergency prediction and management, as well as additional environmental management programs. The Export-Import Bank of the United States provides long-term loans and guarantees, working capital guarantee transactions, and short-term and medium-term insurance to facilitate exports in the water sector. The Overseas Private Investment Corporation provides both direct loans and loan guarantees for U.S.-based investors on water-related projects.

Those agencies that are key funders of international freshwater activities are listed in Table 4.2. USAID accounted for approximately 80 percent of U.S. federal agency support to the water sector not related to U.S. borders and outside of Iraq and Afghanistan. The Millennium Challenge Corporation accounted for 16 percent. Support from all other U.S. agencies combined was less than 2 percent of the total.

A complete overview of federal agency missions and capabilities related to water can be found in Annex A. The range of activities supported by USAID and other U.S. federal agencies include:

- The collection, management, analysis, application, and dissemination of information;
- Integrated water resources management planning and execution at a watershed or basin scale;
- The development of processes, practices and technologies that encourage the sustainable development, use, and management of land and water resources and the transfer of related U.S. technology abroad;
- Securing or leveraging financing necessary to meet water resource management needs, including strengthening enabling environments for private sector investment;

- Capacity building in scientific, technical, financial, operations and management, policy, and legal aspects of water resources management;
- Water-related institution building and strengthening;
- Awareness raising and education;
- Development of participatory and democratic governance structures to ensure sustainable management of water resources; and
- Provision of humanitarian assistance and support of prevention, preparedness and mitigation activities related to water/sanitation, emergency health, and capacity building.

The Department of State leads an interagency working group on water to coordinate international activities and to plan for major international events. USAID missions implement the majority of bilateral programs on water, working closely with recipient governments, non-governmental organizations, and other donors. Coordination takes place at a number of levels. Regional Environmental Officers from the U.S. Department of State at twelve regional environmental hubs around the world often facilitate and coordinate regional activities. USAID regional missions also support work on regional projects and programs. At the project level, coordination varies according to the project, the specific region in which the project takes place, and the agencies involved. Some projects are undertaken directly by domestic USG agencies with limited substantive engagement of the lead U.S. international agencies. Other initiatives involve *ad hoc* coordination mechanisms between two or more agencies. Still other priority projects with significant water-related elements have been coordinated across numerous agencies and other institutions, e.g., Hurricane Mitch, the Southeast and South Asia Tsunami Reconstruction or the Middle East Peace Process. On a smaller scale, interagency coordination of two or more agencies with complementary skills has regularly proved to optimize positive results by drawing on the special strengths of both foreign assistance and domestic technical agencies. For example:

- USAID often couples its strategic planning and community-based field experience with NOAA's technical specialization in weather forecasting, disaster mitigation, hydrometeorological data collection and analysis, and river basin planning support, e.g., in the Central Asian Republics, Central America, and Southeast Asia.
- EPA, DOC and USAID have worked together in the Asia region to take advantage of EPA's capabilities in environmental water and wastewater technologies, in conjunction with DOC and USAID expertise in promoting enabling environments for trade with U.S. companies.
- The Department of State, DOE, EPA and DOC have collaborated in the international S&T "Green Chemistry" effort, directed to limiting sources of upstream pollution through industrial process changes, in collaboration with universities, government ministries and private enterprises.
- As part of the Middle East Peace Process, the Department of State leads the interagency process (including USGS, Bureau of Reclamation, and USAID) on water – combining the diplomatic and political strengths of the State Department with both S&T and development expertise in water and groundwater resources of USGS and USAID on the ground.

4.1.1 USAID and the Water for the Poor Initiative

Within the federal government, USAID has the principal legal mandate and the greatest level of resources directed to the international water sector, and has been active in this area since the 1960s. In the early decades of its work, USAID engaged in a wide range of water-related activities, including dam construction, irrigation works and agricultural interventions, water and sanitation infrastructure, and capacity and institution building across the entire spectrum. With lower funding levels in recent decades, as well as an increased emphasis on the human, social, economic and political dimensions of water resources management, interventions have largely moved away from capital infrastructure activities toward the policies, laws, institutions, operational strategies, and financing necessary to build upon and sustain progress over the longer-term. In strategic places such as Egypt, Jordan, West Bank/Gaza, and most recently in Afghanistan and Iraq, USAID does continue to invest in some large-scale capital infrastructure, including public works for water supply and sanitation as well as irrigation. USAID also undertakes infrastructure projects in post-emergency humanitarian and reconstruction response, such as hurricanes, cyclones, typhoons, earthquakes, or the recent Southeast and South Asia tsunami. Such capital-intensive projects have been the exception, however. USAID's strategic approach has been primarily to work with countries that have included clean water, public health, and sustainable resource management among their national goals. They have worked to improve water sector institutions and reform utilities so that countries are financially capable of providing reliable and affordable water to their people and sustaining water resources over time.

In 2002, Secretary of State Colin Powell announced the $970 million "Water for the Poor," a three year Presidential initiative to improve sustainable management of water resources and increase access to safe water and sanitation. Projects and programs under the initiative focused on three areas:

- **Access to clean water and sanitation services:** Activities included construction and rehabilitation of water treatment plants, water and sewer networks, wells, and sewage treatment plants, as well as health and hygiene promotion programs and loan guarantees to support private sector investment in infrastructure.
- **Watershed management:** Activities included the development of policies and programs and the strengthening of local, national and regional institutions, and management strategies for improved watershed management and interventions to reduce water pollution.
- **Increasing the productivity of water in agricultural and industrial uses:** Activities included rehabilitating existing irrigation systems, building water user groups, strengthening fisheries and aquaculture, and reducing industrial water use and water discharge through pollution prevention, waste reduction, industrial process change, and water reuse.

Under this initiative, the United States has obligated more than $1.7 billion for more than 100 activities in over 79 countries.[49] Over the lifetime of the initiative, 70 percent of the obligated

[49] This includes supplemental funds, including those supporting work in Iraq and Afghanistan.

Table 4.3: Estimated USAID Obligations for the Water for the Poor Initiative, FY03-FY05, including supplemental appropriations. Data provided by USAID.

	Fiscal Year			
	2003	**2004**	**2005**	**Total**
Water Supply, Sanitation, and Wastewater Management	$373M	$584M	$276M	**$1,233M**
Watershed Management	110M	84M	71M	**264M**
Water Productivity	116M	96M	47M	**259M**
Total	**$599M**	**$764M**	**$394M**	**$1,756M**

funds have supported water supply, sanitation, and wastewater management activities; 15 percent watershed management; and 15 percent water productivity. 14 percent of the funds have gone to Sub-Saharan Africa; 17 percent to Asia and the Near East; 51 percent to the Middle East; 5 percent to Europe and Eurasia; and 11 percent to Latin America and the Caribbean.[50] (Detailed breakdown of total actual funding obligations for the Initiative in FY 2005 by region and substantive area are presented in Annex B.)

Among the major results achieved since the onset of the Water for the Poor Initiative and the Congressional Directives are:

- Over 24 million people (including more than 5 million in Iraq) have received improved access to clean water supply;
- Over 26 million people (including more than 13 million in Iraq) have received improved access to adequate sanitation;
- Over 3,348 watershed governance groups were convened and supported to undertake ongoing basin-scale, integrated water resources decision-making to address a diversity of water uses and needs; and
- Over 300 watershed management plans have been developed, adopted, and/or implemented at the watershed or basin scale.

The types of interventions funded by USAID have contributed to a significant shift in the way in which water resources management and water supply and sanitation service delivery are approached in the countries served, including:

- Improved institutions and enabling policies to permit mobilization of domestic capital from public and private sources to meet the needs of underserved populations in water supply and sanitation;
- Enhanced capacity of communities, governments, civil society, and the private sector to manage water resources and provide services in an efficient and effective manner;

[50] These percentages are based on all USAID funding. Excluding supplemental appropriations, the breakdown of funding is as follow: 56% water supply, sanitation and wastewater management activities; 23% watershed management; and 21% water productivity; 22% Africa; 23% Asia and the Near East; 27% Middle East; 8% Europe and Eurasia; and 17% Latin America and the Caribbean. See Annex B for the definitions of regions.

Figure 4.1: Regional breakdown of USAID obligations for the Water for the Poor Initiative.

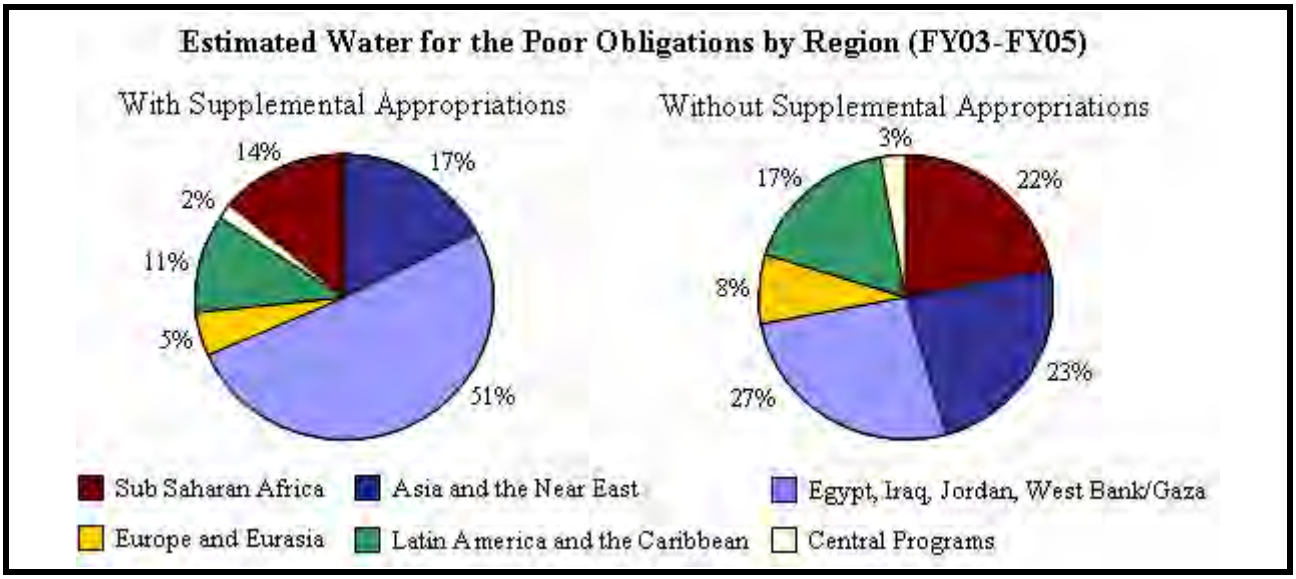
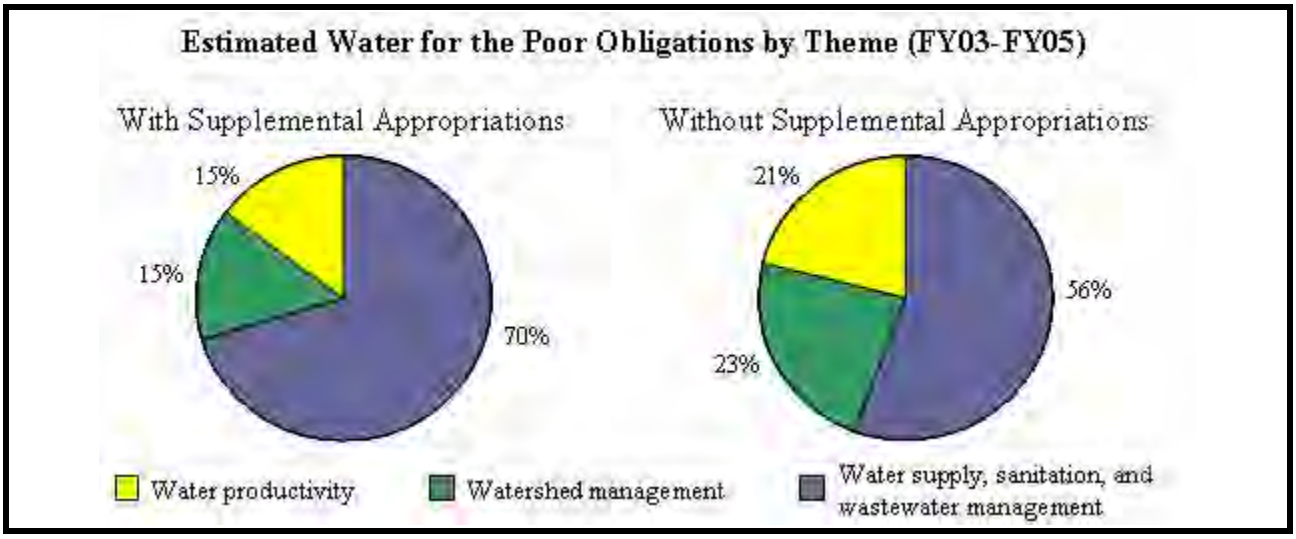


Figure 4.2: Thematic breakdown of USAID obligations for the Water for the Poor Initiative.



- Strengthened structures for transparent, democratic governance, decision-making, and conflict resolution about water resources shared among many users;
- Increased opportunities for constructive partnerships between the public and private sectors, and among donors and international institutions;
- Increased sustainability of the natural resource base required to provide water services and process waste products;

- A more integrated vision and technical approach that links benefits from water resources management to other development goals including health, economic growth, education, and democracy and governance; and
- Improved behaviors to insure effective use of water supply and sanitation infrastructure, in ways that maximize the positive health impacts of these investments.

4.1.2 Millennium Challenge Account

The Millennium Challenge Account was established on January 23, 2004, to provide U.S. global development assistance through the Millennium Challenge Corporation (MCC) in a manner that promotes economic growth and the elimination of extreme poverty and strengthens good governance, economic freedom, and investments in people. The MCC provides support to projects and programs in eligible countries based on country-identified priorities. Currently 23 countries are eligible to receive support. Of the five compacts signed in FY2005, four will have a water component as part of their infrastructure component (see Table 4.4).

Table 4.4: MCC Funding for Water Related Activities[a]. Data provided by the MCC.

Country	Activity	Amount	Total Compact
Georgia	Regional Infrastructure Development Fund	Up to $60.0M	**$295M**
Cape Verde	Watershed Management and Agricultural Support	$6.8M	**$110M**
Nicaragua	Rural Business Development	$13.3M	**$175M**
Honduras	Rural Development: Agricultural Facility	Up to $9.0M	**$215M**
	Total	Up to $89.1M	

[a] Compacts were signed in FY2005 but funds will be obligated over a five-year period.

4.2 Multilateral development banks and financial institutions

The United States is a member of, makes financial contributions to, and exercises leadership in seven multilateral development banks (MDBs) that support freshwater projects around the world. (The United States also contributes to the Global Environment Facility, which is focused on oceans and international waters.) In 2005, the multilateral banks provided more than $3.5 billion in financing for water supply and sanitation, of which $2.2 billion came from the World Bank Group alone. MDB assistance in support of water projects, as a proportion of overall 2005 assistance, is shown in Box 4.1.

Box 4.1: Estimated Water-Related Financing from Multilateral Development Banks in FY 2005. Data provided by the Department of the Treasury.

Organization	Amount
World Bank Group	$2.2 billion
African Development Bank	$285 million
Asian Development Bank	$618 million
Inter-American Development Bank	$446 million
NADBank[a]	$1.25 million
European Bank for Reconstruction and Development[b]	Euro 119 million
TOTAL	**More than $3.5 billion**

[a] In addition to direct NADBank financing, the EPA provided bilateral support totaling $2M to drinking water and wastewater projects in the U.S.-Mexico border region through NADBank during the same period.

[b] The EBRD was able to leverage another Euro 330M in private funds and other resources from this investment.

4.3 Other international organizations

The United States contributes to the general budgets of a number of international organizations that support freshwater projects around the world as well as water and sanitation services in the context of emergency relief. These include many UN agencies (including UNICEF, the World Health Organization, UNESCO, the UN Development Program, the UN Environment Program, the Food and Agriculture Organization, the World Meteorological Organization, the UN High Commissioner of Refugees, and UN Relief and Works Agency for Palestine Refugees in the Near East), the Inter-American Institute for Cooperation on Agriculture, Organization of American States, Organization for Economic Cooperation and Development, Pan American Health Organization, Ramsar Convention on Wetlands, World Conservation Union, International Committee of the Red Cross, International Organization of Migration, and other UN agencies.

As an example of such funding, the Department of State's Bureau of Populations, Refugees, and Migration (PRM), primarily through its Migration and Refugee Assistance (MRA) and Emergency Refugee and Migration Assistance Fund (ERMA) accounts, funds international and civil society organizations to protect and provide humanitarian assistance to millions of refugees and conflict victims worldwide. In FY05, over $750 million was spent for protection and assistance in areas such as food, water and sanitation, shelter, health care, and education. Although funds are not specifically earmarked for water and sanitation, PRM supports projects that ensure that refugees and conflict victims have access to adequate potable water (both in quantity and quality), latrines, and information on hygiene, all at levels that meet accepted international standards for emergency situations. This includes not only planning and building wells, but also providing security for those (generally women and children) who use those wells to bring water to their families.

Table 4.5: Estimated Financial Support for Selected International Organizations Fiscal Year 2005.[a] Data provided by the Department of State.

Organization	U.S. Contribution to Core Budget	% of Core Budget Spent on Water
UNICEF	$342M	10.4%
World Health Organization	$96.11M	1.9%
UNESCO	$77M	8.1%
UN Development Program	$108M	13.1%
World Meteorological Organization	$11M	4.6%
UN Environment Program	$6M	12.3%
Food and Agriculture Organization	$81.62M	0.8%
Total	**$721.73M[b]**	

[a] The U.S. does not fund water programs directly through their contributions to these international organizations. However, it does provide support to the core operating budgets, a percentage of which is spent on water-related programs.

[b] About $36.6M of this amount is spent on water. This number is highly approximate, representing the total amount of U.S. contributions to core funds likely to go to water and sanitation projects from the selected international organizations.

4.4 Coordination with donors, developing countries, and other players

The U.S. participates in a number of formal and informal processes to coordinate the development of both policies and programs related to international water issues. The U.S. often works with both developed and developing country governments to build support for and advance policies and approaches the U.S. wants to promote on international water and sanitation issues. For example, U.S. efforts with G8 countries led to the inclusion of innovative financing mechanisms and point of use technologies for household water disinfection in the G8 Water Action Plan in Evian. U.S. work with a number of other governments led to reforms in the structure of a number of international events (i.e., the UN Commission on Sustainable Development, the World Water Forum, and Stockholm Water week) to better support the exchange of best practices and advance partnerships and programs. In some cases, where there is a strategic advantage, the U.S. will work closely with a few key donors on a specific issue. For example, the highly effective partnership with the Japanese government on innovative financing has yielded significant results, including progress on leveraged financing in the Philippines, Indonesia, and Jamaica. In the Middle East in particular, USAID often works with other donors, each financing a part of major water infrastructure or providing the grant-based technical assistance required by other donor water infrastructure projects.

The U.S. also works to coordinate specific projects and programs at both the global and local level. The U.S. regularly participates in a number of events to coordinate donor efforts in key areas at the macro level. Examples include the Informal Donors Consultation on Transboundary Water – to coordinate diplomatic and development efforts on transboundary water (see Box 4.2); the Integrated Water Resources Info Group – hosted by UNDP to coordinate efforts on national level Integrated Water Resources Management planning; and the Donors Consultation on Water and Sanitation (hosted by the World Bank).

Most coordination on specific projects and programs occurs at the country and regional level, in the context of actual programs and activities on the ground. USAID participates actively in donor coordination bodies at the national level for water resources management or water supply

Box 4.2: The Informal Donors Consultation on Transboundary Water

In April 2000, the Department of State launched the "Informal Donors Consultation on Transboundary Water", an initiative that combines diplomatic and development efforts among interested donors to improve water resources management and mitigate the tensions associated with shared water resources. As part of this effort, the State Department chairs an interagency working group on water to coordinate USG efforts on transboundary water management. Activities include working with donor countries interested in supporting riparian-led initiatives to improve transboundary river basin management. Both the diplomatic and development points of view are involved, and internal coordination across diplomatic, technical, and development agencies within each donor country is encouraged, as well as among them. The group has met five times since 2000 and continues to meet annually on the margins of Stockholm Water Week.

and sanitation delivery in countries where the Agency has programs in the sector.[51] In many cases, the practical outcome of this coordination is better information sharing about what each donor is supporting, where they are working, and who they are partnering with, to facilitate identification of possible areas of coordination and synergy. Because of different planning and budgeting cycles for each donor, it is more challenging to collaborate in joint design and development of activities in advance. However, USAID always develops its programs and activities with a full consideration of what other actors are doing in the sector, to avoid duplication, enhance synergy, and display the Agency's comparative advantage. The newly-established Office of the Director of Foreign Assistance will provide a leadership structure for rationalizing and coordinating all foreign assistance planning, policy, and oversight.

4.5 Leveraging U.S. contributions: Working through partnerships

A joining of forces between the USG and its traditional as well as non-traditional development partners is the most effective approach to addressing water resources problems around the world. Several USG agencies already leverage considerable resources from non-USG sources, promote environments where private sector investment becomes attractive, and strengthen the climate for international trade with U.S. environmental technology firms. Federal agencies have also developed a significant range of partnerships with private sector companies, non-governmental and private voluntary organizations, academic and research institutions, faith-based organizations, host country governments, and international donor partners in strong, mutually supportive relationships that support U.S. water sector interventions as well as the interests of the partnering organizations.

USAID's development experience and long-term presence in each country are attractive to the private sector and other non-traditional actors for the relationships with foreign governments and contextual perspective they provide, as well as the expertise and experience they have in implementing effective water resources management and water supply and sanitation service delivery programs. Other partners bring their own particular strengths to the table, including access to private markets and capital, connections with different constituencies and client bases, additional resources for development interventions, and an opportunity to positively influence the behavior of industries and businesses that are large consumers of water. The development of such partnerships are a core element of USAID's approach, promoted through the Global Development Alliance (GDA) Secretariat. This new business model for development looks to leverage the expertise, resources, and relationships of those who may not have been involved in development activities in the past.

Box 4.3 highlights some recent GDA partnerships in the water sector that illustrate the breadth of work and types of partners who have been involved. Great potential exists for the USG community to increase the number and scale of such partnerships over time, and these types of alliances will figure prominently in future activities.

[51] These bodies are typically chaired either by a national government Ministry, or by a U.N. agency or other international organization.

Box 4.3: Illustrative Partnerships in the Water Sector

Community Water and Sanitation Facility: In collaboration with the Cities Alliance, USAID launched the Facility with seed funding of $2 million to support local authorities and their partners in developing public-private partnerships to expand water and sanitation services to urban slum communities. The Facility provides grants that leverage local resources at least 2:1.

Safe Drinking Water Partnerships: USAID is engaged in a range of partnerships to improve water quality and hygiene to reduce water-borne disease, including the Safe Drinking Water Alliance and The International Network to Promote Household Water Treatment and Safe Storage. Simple household-level water treatment and safe storage interventions can lead to dramatic improvements in drinking water quality and typical reductions in diarrheal disease of 30-50% or more — making an immediate difference to the lives of those who rely on water from polluted rivers, lakes and, in some cases, unsafe wells or piped water supplies.

Community-Watersheds Partnership Program: The Coca-Cola Company (TCCC) and USAID have joined together to provide more than $4 million in incentive grants to local TCCC system business units and bottlers and USAID missions to carry out a broad range of water-related projects in countries where both operate. The alliance matches the business objectives of a major international corporation with the needs for water resources management and service delivery, and works in a diverse array of activities ranging from water supply, sanitation and hygiene to watershed management and biodiversity protection. Projects are underway in Mali, Bolivia, Indonesia, and Malawi, and several more projects in Africa will be initiated in FY2006.

Global Water Revolving Fund Alliance: The New York Environmental Facilities Corporation leads this outreach program to promote the use of the U.S. State Revolving Fund sustainable financing model which mobilizes local private capital with public sector support to finance drinking water and wastewater projects. Under the Alliance an outreach and training program will be conducted in selected countries to inform and prepare key decision makers to apply this SRF or "Sustainable Finance" Model in the financing of municipal water supply and wastewater projects.

White Water to Blue Water: The White Water to Blue Water Initiative (WW2BW) is designed to promote the practice of integrated watershed, coastal, and marine ecosystem-based management in support of sustainable development. The Initiative has spawned hundreds of different alliance relationships with governments, international organizations, private sector businesses and civil society, including USAID's 1.5 million dollar matching partnership with the UN Foundation to support the Meso-American Reef Alliance in Mexico and Central America. WW2BW provides a model for regional partnership building and works to provide technical expertise to groups seeking to launch new alliances.

The West Africa Water Initiative (WAWI): This $45 million partnership was founded by the Conrad N. Hilton Foundation in 2002, and works with governments and communities to increase access to safe drinking water and sanitation in rural and peri-urban areas, reduce waterborne disease, and ensure ecologically and financially sustainable management of water quantity and quality in Ghana, Mali and Niger. The Initiative involves 13 partners in the international water sector, including a private foundation, an international agency, a bilateral donor, NGOs, academia, and a private sector industry association.

The Partnership to Health through Water (PHW): With a goal of reducing death and disease associated with water, the PHW mobilizes its partners at the household, community, and catchment levels to raise awareness among policy makers regarding the applicability and efficacy of water-related interventions; to generate and make use of data regarding the implications of water-related disease; to facilitate the development of initiatives to implement short and long-term approaches to reduce water-related diseases; and to strengthen technical capacity with respect to program design, implementation, management, and evaluation. The PHW is organized by the World Health Organization and supported by the U.S.

5. The USG Strategy for the Water and Sanitation Sector in Developing Countries

5.1 Context

U.S. efforts on water and sanitation are important components of our overall efforts on development assistance. Increasing access to basic water and sanitation services and promoting access to safe water for the poor is an investment in the health and well-being of people. Access to safe water and sanitation reduces disease, improves children's health, and creates opportunities for women and girls. Improved water management and increasing the efficiency of water use for agriculture and industry promotes economic growth and institutions that are accountable to meeting the needs of the people. Promoting cooperation on shared waters strengthens regional ties and promotes stability. As such, water is a key element for building and sustaining democratic and well-governed states.

While water is a crucial element of our development assistance approach, it is just one part of a much broader U.S. effort. U.S. expenditures of official development assistance must support a broad range of activities that work together to create just and responsible nations. Therefore, U.S. efforts on water must be focused on areas of greatest need where the U.S. is well positioned to provide assistance and where U.S. efforts can generate the greatest results. The Office of the Director of Foreign Assistance is presently introducing a new framework for foreign assistance aimed at aligning our foreign assistance resources with our foreign policy objectives. The new framework identifies priority objectives and categorizes countries receiving U.S. foreign assistance by shared characteristics and goals through this process. The Department of State, working closely with USAID and other technical agencies, will begin to develop metrics for measuring progress, identify priority countries, and develop timelines for projects and programs.

There are few countries where U.S. development assistance is large enough to support large infrastructure investments. In a vast number of countries, U.S. efforts have to focus on smaller-scale, targeted activities based on country priorities and to address critical needs. In both cases, we need to ensure that water and sanitation issues are well-integrated into other development sectors where water can play a strong role. For long-term sustainability, our interventions must be designed in close cooperation with the communities they intend to serve, and we must ensure those communities have a sense of ownership.

We also have to leverage the resources of others. A key part of our approach on water must be the development of partnerships and activities that can effectively leverage the dollars, expertise, and political will of other donors, the private sector, international organizations, foundations, non-governmental organizations and other foundation, charitable and faith-based groups.

Through diplomatic avenues, the United States has been and can be a positive voice for change throughout the world – raising the political profile of water and sanitation issues and working to move international institutions and organizations towards a more action-oriented agenda.

5.2 U.S. objectives on water and sanitation for the poor

The goal of U.S. foreign assistance is to help build and sustain democratic, well-governed states that will respond to the needs of their people and conduct themselves responsibly in the international system. U.S. activities on water will contribute directly to achieving this goal by protecting human health and responding to humanitarian crises; promoting economic growth; enhancing security; and developing public participatory processes that improve transparency and accountability, leading to more just and responsive institutions that meet the needs of people. Within this context, U.S. objectives on water are to:

1. **Increase access to, and effective use of, safe water and sanitation to improve human health.** This includes both short and long term sustainable access to safe water and adequate sanitation, as well as education activities to improve hygiene.

2. **Improve water resource management and increase the productivity of water resources.** This includes optimizing the benefits of water among competing uses while ensuring human needs are met and environmental resources are protected. It also includes minimizing the use and increasing the productivity of water used in industrial, agriculture and other consumptive sectors, as well as supporting pollution prevention programs and other programs that reduce water losses in domestic water systems.

3. **Improve water security by strengthening cooperation on shared waters.** This includes the strengthening of institutions and processes to improve basin-level watershed management and public participation in planning and service delivery.

5.3 Program guidelines

A number of guidelines will continue to shape U.S. programs on water:

Country-driven approach: The majority of resources will be programmed in consultation with recipient countries and based on U.S. development priorities and community, local, national, and regional needs. Priority will be given to those countries that identify water and sanitation as key elements of their national development plans and strategies. Water and sanitation issues are extremely heterogeneous, and so any analysis of need must look deeper than national-level figures to take into account both urban and rural needs.

Results-based programming: U.S. activities will be focused on achieving measurable results related to the stated objectives. Monitoring will be done to assess the progress as well as the long-term sustainability of projects and programs. As the new foreign assistance process moves forward, the agencies involved in foreign assistance plan to convene a workshop specifically to look at indicators in the water sector. Notional examples include:

- Number of people with improved access to safe water and adequate sanitation.
- Number of watershed management plans being implemented; number community user groups functioning; or national level coordination processes functioning.

- Regional agreements being implemented and/or regional institutions functioning for shared water management in targeted regions.

Beyond addressing outputs, we will also explore ways to measure the impact on issues such as the incidence of diarrheal disease and water-related conflicts.

Maximizing impact: Within its areas of competitive advantage, the U.S. will seek a balanced portfolio of high and low-risk projects that take into account "on-the-ground" conditions, with the intent of maximizing the long-term impact of U.S. activities. Projects and programs will be developed with stakeholders at the lowest appropriate level to ensure ownership and promote sustainability. Appropriate consideration will be given to the special needs of women and children and to capitalize on their role as leading agents of change within their communities.

Consideration will also be given to the most effective form of support. Capacity building will be a key element of all programmatic activities to ensure sustainability, including building scientific and technological capacities to support sound decision-making and the adoption of low-cost innovative approaches for water management and service delivery. The existing conditions on-the-ground will also be a key factor. For example, many cities and towns in developing countries have existing water and sanitation service providers that currently do not provide services in poor communities, particularly slums and informal settlements. In many cases, the lowest cost option to serve the poor on a sustainable basis is by extending the existing service providers' networks into these poor communities with different types of connections and pricing strategies. We will continue to seek out the most effective methods for reaching out to key populations and which contribute to other programmatic goals.

Leveraging through partnerships: The U.S. will seek to leverage its contributions by developing partnerships, establishing public-private alliances, and working to coordinate U.S. activities at global, regional and national levels. In addition to combining resources on projects and programs, we will seek to work with others to improve information sharing, catalyze action, and build a collective political will in key areas. The U.S. will continue to work through formal and informal global, regional, and national level processes to raise the profile of water and sanitation issues; highlight innovation; and reform intergovernmental organizations and institutions so that they better advance partnerships and activities on water. U.S. officials will continue to encourage leaders from other governments to include water and sanitation in national development plans and strategies to make the reforms necessary to create an enabling environment for investment and to promote public participation. The U.S. will also work to disseminate best practices and lessons learned to development partners and the international community.

5.4 Focal areas

Consistent with the strategic focus and guidelines, above, key themes of projected U.S. activities are contained in the six broad categories listed below. Capacity building, using science to support sound decision-making; and promoting, where appropriate, the use of innovative approaches and technologies will be key actions in each of the listed focal areas.

5.4.1 Governance

The U.S. will focus its efforts on domestic good governance in two areas: sound water management and creating an enabling environment. These areas are closely related to integrated management and the building of democratic and responsive institutions (public and private, both for-profit and not-for-profit) and include aspects of both civil and corporate governance.

Sound water management at the local, national, and regional level. Good governance practices rely upon a framework that enables people, including the poor, to openly discuss and agree to cooperate and coordinate their needs and actions regarding the management of natural resources. Sound water management requires optimizing the benefits from water among its potential uses consistent with stakeholder needs. It should foster the development of a shared vision, and the participatory design and implementation of improved water policies and legislation at all levels of governance, from local to national. It should also establish a clear institutional framework that provides the organizational structure and capacity to implement integrated water management at local, national, and transboundary scales. At the regional level, this means strengthening the role of institutions that promote cooperative management of water at the basin level. This includes taking into account environmental, technical, social, economic, and cultural issues, as well as the quality and quantity of water quality management. Pollution prevention, reduction of contamination to surface waters and groundwater from point sources, non-point sources (storm water and rainfall runoff), and practices that adversely impact groundwater availability and quality in aquifers will be addressed. These activities are most appropriate in rebuilding or developing countries where the policies, institutions, and processes are not yet in place. Candidate countries include Bangladesh, Ethiopia, and Indonesia. Examples of possible basins for strengthening cooperation on transboundary water include the Nile, the Okavango, and the Amu and Syr Darya.

Examples include:

- Transboundary water: Working through the United Nations Development Program, the United States launched the Shared Rivers Program to strengthen institutions for the shared management of water resources. Programs are underway in several basins throughout the world including the Mekong, Niger, and Nile. On the Nile, U.S. funds have supported riparian country negotiations to develop a legal framework for joint management of the basin's resources.

- Regional institutions for management: Shared river basins represent over 75 percent of southern Africa's surface water. USAID is providing training and technical assistance to relevant institutions through the Regional Center for Southern Africa and its "Improved Management of Shared River Basins Program" in **Angola**, **Namibia**, and **Botswana** to improve basin-wide planning and management capabilities and to foster community participation in environmentally sound practices. It is building the capacity of regional institutions to more effectively engage in biodiversity conservation, regional cooperation, conflict mitigation and sustainable management of freshwater resources.

- Integrated water resources management: The U.S. has been supporting programs through the Global Water Partnership to strengthen participatory decision making on integrated water resources management (IWRM) in **Ethiopia**, **Indonesia**, and **El Salvador**. In each of these countries, IWRM laws have been passed, and the programs are supporting the implementation of these laws at both the national and basin level.

- National level planning and management: In **Indonesia**, USAID has linked the delivery of services in water supply, sanitation and hygiene to upper watershed management and the maintenance of the environmental services provided by intact systems. A focus on improved health through integrated water supply and sanitation services, hygiene behavioral change, food security, and healthy ecosystems is undertaken through the involvement of stakeholders in decision-making, the full engagement of the public and private sectors, as well as the proper policy and enabling environment for financial and environmental sustainability.

- Water Safety Plans (WSP): WSPs are health-based risk assessments that identify vulnerabilities in water supply systems from the "catchment to consumer". They provide communities with the information necessary to set priority actions and invest resources appropriately, thereby offering cost-effective solutions for reducing risks to human health caused by water system weaknesses. The U.S. (EPA, HHS/CDC and USAID) has partnered with other international donors (Australia, the UK) and intergovernmental organizations (World Health Organization, UNICEF) and the private sector (The Coca-Cola Company) to develop model activities in **Bolivia**, **India,** and **Jamaica** and to develop a WSP Web-portal for exchanging information on best practices and to serve as a repository for technical information, guides, manuals, case studies, etc.

- National Plans of Action (NPA): NPAs identify threats to the coastal and marine environment throughout a watershed and develop integrated watershed and coastal area management approaches to address land-based sources of pollution. NPAs are a tool developed by the international community to catalyze and facilitate sustained action to prevent, reduce control, and/or eliminate degradation of the marine and coastal environment by land based sources of pollution. NOAA, in cooperation with United Nations Environmental Program, provides direct technical assistance and advice to governments in the Wider Caribbean in the development of their NPAs. The NPA process is underway with the help of NOAA and UNEP in **Trinidad** and **Tobago**, the Yucatán in **Mexico** and regions of **Panama**.

- Regional markets: With FREEDOM Support Act Funds, USAID is assisting **Kazakhstan**, **Kyrgyzstan**, and **Tajikistan** to develop a market-based framework for negotiating water flows and rights in Central Asia. Water will be included as an important component of the regional electricity market, consistent with global best practices in energy market design.

Strengthening utility management and regulation. Development assistance alone will not meet developing country needs in water and sanitation – resources will need to flow from the private sector, particularly the domestic private sector. Water utility reform, combined with

sustainable capital market financing, can be a powerful combination. Water and sewerage utilities in developing countries are often operating far below sustainable cost recovery levels. They struggle to maintain current inadequate levels of service, and lack capital to even begin to expand to the poor populations in slums, peri-urban areas, and villages without access to water and sanitation. Addressing problems of financial sustainability and weak management often requires fundamental reforms in how these utilities are run, how they are regulated, and in the pricing and tariffs charged by these service providers. Corporate governance also needs strengthening, including issues of transparency and corruption. These activities are most appropriate in rebuilding or developing countries where the infrastructure for good governance is not yet strong enough to support private sector engagement.

Examples include:

- Legal and regulatory reform: In **Egypt** and **Armenia**, USAID has helped to establish water regulatory agencies. These agencies have adopted regulatory methods that allow water utilities to transition to adequate levels of cost recovery, ensuring the financial sustainability of services.

- Utility reform: USAID Jordan helped the Government of **Jordan** to corporatize the Aquaba Water Corporation. This is the first incorporated water service provider in the country to become operationally and commercially independent. This has had a major impact on the efficiency and cost recovery of the corporation. Following this successful experience, USAID is now assisting in the corporatization of the Amman water and sewerage system.

5.4.2 Mobilization of domestic resources

In many transforming countries there is capital within the country that can be invested to meet public needs. Innovative financial tools need to be developed to reduce risks and create incentives for the investment of local capital into the water and sanitation sectors. A number of models that have proven successful in the U.S. and have begun to be applied internationally include the use of partial loan guarantees and the development of pooled and revolving funds. These activities not only increase cash flows for water and sanitation related infrastructure; they help strengthen and build local capital markets. These activities are most appropriate in countries with an improved investment environment and developed or developing local capital markets. Candidate countries include Egypt, India, Indonesia, Nigeria, Philippines, South Africa, and Uganda.

Examples include:

- Loan guarantees: Since 1999, USAID has offered partial loan guarantees to private financial institutions as a way to increase financing for water and sanitation infrastructure development. The presence of a guarantee can help municipalities gain access to credit for high-priority projects in poor areas. In **South Africa**, this mechanism enabled the Vlakfontein Outfall Sewer District in Johannesburg to provide sanitation to approximately 100,000 people.

- Pooled funds: In **India**, USAID used its Development Credit Authority (DCA) as a credit enhancement for the pooled financing of several municipal urban infrastructure projects. DCA is a proven and effective tool that permits USAID to issue partial loan guarantees to private lenders to achieve economic development objectives, helping mobilize local capital in creditworthy but underserved markets. In the state of Tamil Nadu, $6.4 million was made available to participating municipalities, providing benefits to an estimated 593,000 people. The pooled financing mechanism supported by DCA will provide investment funds to small and medium urban local bodies (ULBs) to implement water and sanitation projects, which will benefit low-income populations. USAID also used a DCA guarantee to support the second pooled municipal bond issuance to improve and expand provision of water and sewerage services in the Bangalore Metropolitan Area, through a $21.7 million bond for eight municipalities.

5.4.3 Infrastructure investment

Infrastructure at all levels is required to meet basic needs and to ensure water is available for multiple uses despite seasonal and annual variations in rainfall. These projects range from U.S-support of large water systems and wastewater treatment to small-scale community projects providing access to water and sanitation services and managing long-term water needs for agricultural or other purposes. U.S. activities will include funding or financial support for small to medium projects and working through international financial institutions and other donors to support large-scale projects overseas and tie into goals on access to water and sanitation services and regional security. Support for small-scale infrastructure is appropriate in rebuilding and developing countries. Candidates include Ethiopia, Haiti, Kenya, Pakistan, and Vietnam. Aside from those projects supported through international financial institutions that receive support from the U.S., U.S. support for large scale infrastructure is only likely in a few countries. Possible countries include Afghanistan, Egypt, Iraq, Jordan, and the West Bank/Gaza.

Examples include:

- Water and wastewater infrastructure: By the end of FY 2006, interventions sponsored by USAID in **Egypt** will have expanded access or improved the quality of drinking water and wastewater services for more than 22 million people. Since 1975, USAID has invested more than US $3.4 billion in thirteen water/wastewater projects. In the earliest years of the program, wastewater infrastructure was constructed to relieve flooding of raw sewage in Cairo and Alexandria. During this same period, water and wastewater infrastructure in the war-damaged cities along the Suez Canal was rehabilitated or replaced. Since the mid-1990s, the program focus has shifted to smaller urban areas in the Delta, South Sinai, and Middle and Upper Egypt. The most recent focus of the program is on developing the institutional capacity of water and wastewater facilities.

- Small-scale infrastructure: In 2002, USAID and the Conrad N. Hilton Foundation announced a nearly $45 million public-private partnership to provide potable water and sanitation to rural villages in **Ghana**, **Mali**, and **Niger**. Under this partnership, USAID committed $4.4 million, which was partnered with funding from the Hilton Foundation,

World Vision and other partners for a total of $40.7 million. By 2008, the partners expect to have provided Ghana, Mali and Niger with a minimum of 825 new water boreholes, 100 alternative water resources and 9,000 more latrines, reaching more than one-half million people. In addition, thousands of adults, children and teachers will have been instructed in safe hygiene and sanitation practices.

5.4.4 Protection of public health

While increasing access to improved infrastructure for water supply and sanitation is a critical component of protecting public health, hygiene interventions are important complementary activities to maximize the positive public health impact of improved hardware and to protect public health in case of any hardware shortcomings. A limited number of hygiene activities focused on key, universally-accepted behavioral outcomes and targeted at the household and personal level will be supported. These include ensuring the safety of drinking water at the point-of-use, hand washing, and household sanitation. These activities are appropriate in any country with a high prevalence of diarrheal disease. Possible countries include Afghanistan, Bangladesh, Ethiopia, Haiti, Kenya, India, Indonesia, Madagascar, Malawi, Nepal, Peru, Somalia, Sudan, Uganda, Zambia, and others.

Safe drinking water management. Safely managing drinking water at the point-of-use, including safe handling, storage, and disinfection, is critical to the protection of public health. Even populations that have access to an improved water supply often do not have water that is safe to drink because of contamination during distribution, i.e. in transport, storage, and handling of remote supplies (e.g. communal wells or boreholes) or in piped networks subject to contamination. For these reasons, in places where there is no tap in the household providing safe water 24 hours a day, it is often necessary to disinfect water at the point of use, such as a household, school or health facility – an approach that has been proven to be a very cost-effective means of reducing diarrheal diseases.

One way to scale-up of these efforts is to support multiple approaches and technologies through diverse program platforms and channels, within reasonable limits. Many technologies for point-of-use disinfection can be manufactured in-country (e.g. chlorine solution, ceramic filters), while others may be more effectively produced for regional or international distribution. From the program perspective, it is ideal to have more than one option available, since no single technology will be universally applicable to all situations, while keeping the overall number of options reasonable so that their promotion is fairly well-focused. Public-private partnerships for both manufacture and distribution are an important part of the USG programmatic approach on this issue, with public funds largely targeted for promotion efforts.

Currently, the USG focus is on chlorination at the household level, working with two systems: the Safe Water System developed by the Centers for Disease Control and Prevention (CDC) and the Procter and Gamble PuR product. PuR combines chlorination with flocculation to remove suspended sediment, which is particularly important for populations relying on surface water supplies. Both approaches are closely coupled with education on related hygiene practices, including protected storage and hand washing. Implementation has been through non-

governmental organizations with USAID support for implementation, CDC technical assistance, and P&G financial and technical support (in the case of PuR).

Over the longer term, it is envisioned that other point-of-use technologies and approaches will become part of the USG programs in this area. USAID also participates in public-private collaboration focused on changing behaviors related to various technologies for treating household water, sharing knowledge, and identifying opportunities for country-level scale-up.

At the policy level, the USG, in collaboration with other international partners, promotes the safe storage, transport, and point-of-use disinfection of drinking water supplies and is a founding member of the International Network to Promote Household Water Treatment and Safe Storage. With a secretariat based at WHO, the Network promotes the rapid scale up of efforts for protecting, filtering and disinfecting drinking water at point of use. It has proven to be an effective platform for sharing knowledge, identifying opportunities for country-level scale-up, and forging partnerships for implementation.

Examples include:

- Production and social marketing of water treatment solutions: Diarrheal disease is one of the primary causes of mortality and morbidity among children under five in **Madagascar**. According to the 2003-2004 DHS, some 65 percent of Malagasy households do not have access to safe water. CDC and USAID interventions to address these problems are showing a positive impact, which can be attributed to the increased availability of highly subsidized socially marketed water treatment solution, Sûr'Eau, coupled with increasing the knowledge of hygiene and sanitation messages by rural households. Each bottle provides up to 2 months of clean water for a family of six for approximately $0.15. From October 2004 to September 2005, 601,372 bottles were sold, an increase of 10 percent from 2004.

- Safe Water Systems and HIV/AIDS: In 2001-2002, CDC demonstrated that the use of the Safe Water System (SWS) in people living with HIV/AIDS (PLWHA) in **Uganda** resulted in a 25 percent reduced risk of diarrheal diseases and a 33 percent reduction in the number of days ill with diarrhea. The SWS has been incorporated into a preventive care package that has been distributed to over 40,000 PLWHA in an ongoing program.

- Use of PuR: Under a Global Development Alliance, USAID, Procter & Gamble, Johns Hopkins University, and PSI worked together in 2004-05 to promote PuR as one household-level solution to the problem of unsafe drinking water quality. Having personnel already trained in the use of PuR was critical to rapid deployment of the product to zones of **Pakistan** most severely affected by the earthquake of October, 2005.

Improving hygiene and sanitation. Within the context of hygiene and sanitation activities at the household level, the USG supports a behavior-centered approach focused on the prevention of diarrheal disease. Current areas of emphasis focus on improvements at large scale for three key hygiene practices: safe feces disposal, proper hand washing with soap, and point-of-use water treatment and safe storage (see "Safe Drinking Water Management," above). Each of

these interventions typically results in a 30-50 percent reduction in diarrhea prevalence in children under five, and collectively they can have greater impact, with as much as a two-thirds reduction in prevalence. Strategically, this behavior-centered approach has been described through the Hygiene Improvement Framework (HIF), which has also been adopted and further adapted by UNICEF, the World Bank, and other development partners. The key underlying principle for the HIF is that successful diarrhea prevention activities require intervention in three areas: access to hardware (water supply, sanitation facilities, water containers, soap, and appropriate water treatment technologies); hygiene promotion activities; and the overall environment in which hygiene improvement programs take place (policy, capacity building, partnerships, financing, community participation).

In hygiene and sanitation, success ultimately relies on using the HIF approach to change norms of behavior. As part of the USG strategy for hygiene and sanitation, USAID will work to incorporate hygiene improvement activities into diverse health and non-health programs, focused on strengthening partnerships, coordinating efforts between the various involved actors, integrating hygiene and sanitation promotion into other sectoral programs (for example, education, urban development, economic growth, environment/source protection, gender), and engaging the private and commercial sectors to ensure products and services are available. Examples include public-private partnerships with soap manufacturers to promote hand washing; working with schools as well as the antenatal care system on hygiene promotion to reach children and their caregivers; and approaches to sanitation relying largely on working with local entrepreneurs to make appropriate and affordable products available, reserving public and donor funding for various demand creation activities.

Examples include:

- Global Public-Private Partnership to Promote Hand Washing with Soap: USAID and CDC have joined forces with governments, development agencies and private industry to promote hand washing with soap in order to reduce the incidence of diarrheal diseases. A published review of all the available evidence suggests that hand washing with soap could reduce diarrhea incidence by 42-46 percent. Combining the expertise, facilities and resources of the soap industry and governments, the initiative aims to both impact health and expand the soap markets in developing countries. Other partners include World Bank and the Water and Sanitation Program (WSP), London School of Hygiene and Tropical Medicine ((LSHTM), Academy for Educational Development, UNICEF, Bank-Netherlands Water Partnership, soap manufacturers, and others. Hand washing initiatives have been launched in **Ghana**, **Peru**, **Senegal**, and **Nepal** with plans for similar partnerships underway in **Colombia**, **Vietnam**, **Indonesia** and other countries.

5.4.5 Science, engineering, and technology cooperation

U.S. federal agencies are global leaders in many areas of biological, physical or social science and engineering and technology expertise related to water that is of great applicability around the world. In areas such as pollution prevention, satellite remote sensing, global information systems, modeling and simulation, and high-performance computing are all niches where U.S. water-related science and technology leads the world. The U.S. is also well-positioned to help

countries to augment their water supplies using desalination and wastewater recycling technologies through sharing new technologies. Many of these activities are appropriate for transforming countries where institutions exist for productive science and technology partnerships. Possible countries include India, Mexico, and Pakistan.

Examples include:

- Radio and Internet Technology for Communication of Weather and Climate Information to Rural Communities for Sustainable Development in Africa (RANET): USAID's Office of U.S. Foreign Disaster Assistance is presently working with NOAA and other National Meteorological and Hydrological Services to enhance the integration of meteorological information for disaster reduction and socioeconomic development. RANET aims to improve access to weather, climate, and related information such as health, hygiene, education, HIV/AIDS, for resource-poor populations in remote locations in order to assist in day-to-day resource management decisions and to prepare for natural hazards.

- Middle East Regional Cooperation (MERC) and Cooperative Development Research (CDR) Programs: USAID manages two open-topic, competitive research grants programs focused on applying scientific and technical expertise to solve issues relevant to regional development. The MERC Program specifically focuses on promoting technical cooperation between Arab and Israeli scientists, students, and communities in the Middle East; the CDR Program funds collaborative applied research involving scientists from Israel (and sometimes the U.S.) working with their counterparts in developing countries. Under MERC, Jordanian, Palestinian, and Israeli scientists are studying water quality along the Jordan River, and scientists from the West Bank, Israel, and Jordan are working together to evaluate the potential environmental impacts of the proposed Red-Dead Sea Conduit. Highlights of CDR projects related to water include a pilot scale project in Senegal on slow sand filtration, through which outside funds were attracted for a full-scale plant with the capacity to treat 5,000 m^3 per day of wastewater. In a project on sustainable development and protection of water resources in the irrigated land of the Ily river delta, Kazakh and Israeli scientists developed strategies to reduce soil salinization, water use, and surface and groundwater contamination by modifying current irrigation practices. A CDR-project in Kyrgyzstan established a system to broadcast daily irrigation requirements to farmers to help conserve water and limit salinization from caused by over-irrigation.

- Asia Flood Network: NOAA and USGS provide technical assistance to USAID's Office of U.S. Foreign Disaster Assistance (OFDA) to strengthen the capacity of national and regional institutions in climate, weather, and hydrometeorogical forecasting and to reduce vulnerability to natural hazards. NOAA and USGS have cooperated to integrate complementary technologies to mitigate the negative aspects of floods and simplify their application for developing-world counterparts. NOAA's operational responsibilities include weather monitoring – nationally as well as globally via geostationary and polar-orbiting satellites – and river and flood forecasting.

Deep aquifer research: The United States Geological Survey has been asked by USAID and Department of State in Dhaka to assist the government in Bangladesh to develop a strategy to better understand the ground-water arsenic situation and in particular to study possible alternative sources of clean water. Many of the activities include capacity-building activities, including: test drilling and aquifer testing in cooperation with the Bangladesh Water Development Board (BWDB); core drilling and resistivity studies in cooperation with the Geological Survey of Bangladesh (GSB); geophysical logging conducted in cooperation with Dhaka University Geology Department, and Columbia University, and water sampling and analysis in cooperation with the Bangladesh Atomic Energy Commission (BAEC).

5.4.6 Humanitarian assistance and emergency response

Water and sanitation, and relevant hygiene education and health programs constitute a small but normally recurring portion of humanitarian assistance in responding to natural disasters and human-caused catastrophes abroad. Conflict and natural disasters can damage water systems and destroy access to water, reducing the supply required to meet the basic needs of affected populations. An influx of displaced populations may overburden existing water supplies, leading to conflict and life-threatening conditions. During crisis, people are less likely to wash, and gastrointestinal and other water-caused diseases may become prevalent and even life-threatening. The first goal of water interventions in humanitarian crises is to save lives, which means providing sufficient water of acceptable quality to meet daily human requirements and establishing basic hygiene and sanitation measures to prevent the spread of disease. The second goal is to rehabilitate and improve water resource systems and increase levels of local capacity to ensure continuing maintenance and operation of water and sanitation systems and hygiene practices. The third goal is to mitigate the impact of recurring natural disasters. These activities include: risk reduction programs, such as capacity building of community, local, national and regional entities on early warning of extreme hydrometeorological events to lessen the impacts of potential disasters; and managing water resources to address the issue of cross-sectoral water demands such as agriculture, livestock, and conservation and to lessen risk for potential disasters.

Assessing the options for water and sanitation interventions requires a clear understanding of current conditions and cultural issues and dialogue with local groups and communities to establish a participatory framework. Increasing access to clean water and sanitation during emergencies can take many forms: tapping into ground water resources, community ponds or water harvesting structures; refurbishing/repairing existing systems; water disinfection; latrine constructions; hygiene education; and trucking potable water to affected populations. In responding to disasters, the USG implements the majority of these interventions in partnership with local or international NGOs, public international organizations, private voluntary organizations, and consultants. In 2005, approximately $96 million from the International Disaster and Famine Assistance (IDFA) account was directed toward water, sanitation, and hygiene activities.

These activities are undertaken in response to humanitarian crisis.

Examples include:

- Complex emergencies: USAID is currently providing water and sanitation services to more than 1.5 million people residing in Internally Displaced Population (IDP) camps in Darfur, **Sudan**. Water provision comes primarily through borehole wells, as alternative water resource options in Darfur's desert environment are limited. Sanitation activities focus on hygiene promotion and latrine construction in order to reduce the potential for the spread of disease within camp settings. These services provide life-sustaining support to families that do not have access to their traditional water points and are reliant on the international community for assistance.

- Tsunami reconstruction: The tsunami that hit Aceh, **Indonesia,** completely destroyed the water infrastructure of the major towns and rural villages. In rural areas, USAID supported the rehabilitation and desalinization of existing wells. In some cases this proved successful. In cases where it did not, USAID worked with communities to construct new water points in order to meet urgent water needs of affected population and to support the re-establishment of lost livelihoods. In addition, the CDC's Safe Water System was deployed in response to the tsunami in Aceh, **Indonesia**, **India**, and **Sri Lanka, and the Maldives**.

- Earthquake relief: Immediately following the October, 2005, earthquake in **Pakistan**, USAID established water and sanitation infrastructure in Internally Displaced Person camps. Following that immediate influx of people, USAID supported those families in rural villages whose water points had been destroyed. By rehabilitating piping networks that brought water from distant springs, USAID was able to assist with the provision of water to families at their points of origin without their having to migrate to camps for assistance.

5.5 Issues for further consideration

The following issues are highlighted because they represent considerable challenges to the provision of safe water and sanitation services. Although they are areas addressed by existing programs, they warrant more attention.

- **Increasing access for the poor.** The poor often lack water and sanitation systems, due either to the absence of systems or to exclusion by existing service providers. Extensive evidence is emerging from over two decades of programming in water and sanitation that service delivery targeting the poor requires attention to three key areas: policies which provide incentives to specifically include poor beneficiaries, improved institutional governance to improve service quality and access, and financing for infrastructure and service expansion. Specialized business and technical service models addressing these key areas will enable expansion of services to poor consumers on a sustainable basis.

- **Sanitation and wastewater treatment.** With half of the developing world's population having no access to any sanitary means of feces disposal, the sanitation gap clearly remains a major public health issue, in both rural and urban areas. In addition, many millions of urban residents with access to sewerage (and therefore technically with access to improved

Box 5.1: USAID Efforts to Meet the Water and Sanitation Goals in Africa (Source: USAID)

The ability of Sub-Saharan Africa countries to improve the health of their people, eradicate poverty, and empower women will depend in no small part on success in providing widespread access to clean water and sanitation. According to the most recent World Health Organization data, over 288 million people in Sub-Saharan Africa lack access to improved drinking water sources, and over 437 million lack access to improved sanitation. Millions of Africans die each year from preventable waterborne illnesses and up to half the region's population at any one time suffers from diseases related to unsafe drinking water and poor sanitation. In Sub-Saharan Africa, forty billion working hours are lost each year carrying water, and this burden falls primarily on women and girls. This time could be spent on productive activities and education.

USAID's drinking water and sanitation activities in Sub-Saharan Africa increase the availability of clean drinking water, protect drinking water sources from contamination, and provide access to improved sanitation. For example, residents in villages in southern Sudan are working with USAID to form committees to install and repair boreholes and water pumps. In Madagascar, USAID surpassed its annual target of 450,000 people receiving socially marketed water disinfectant solution, and the local organization Sûr'Eau ('Safe Water') provided over 529,000 people with one year's supply of clean drinking water in the process. In South Africa, a USAID loan guarantee program enabled the Vlakfontein Outfall Sewer District in Johannesburg to provide sanitation facilities to approximately 100,000 people.

Annex C details the current planning that USAID is undertaking in developing its strategic approach to water and sanitation activities in Africa. As noted in that annex, one key factor in the Agency's planning is the large scale of the water and sanitation problem in the region. USAID must take advantage of opportunities to substantially leverage its own resources through public-private partnerships, collaboration with regional institutions, other donors, intergovernmental organizations and international finance institutions, and by encouraging host government investment in this sector. The Agency must also invest in activities that mobilize and facilitate the investment of private funds in this sector.

Examples of highly leveraged USAID investments in water and sanitation in Africa include the West Africa Water Initiative (WAWI) the Millennium Water Alliance (MWA) Water and Sanitation Program in Ethiopia, and the Global Community Watersheds Partnerships Program with The Coca-Cola Company. WAWI unites USAID with the Hilton Foundation, international organizations, local governments and communities to provide water supply and sanitation service delivery for nearly half a million people in Ghana, Mali, and Niger. The MWA program in Ethiopia leveraged private funding from several international non-governmental organizations and local resources to create a cost-effective community-based program providing improved water and sanitation to 70,000 Ethiopians. The Alliance with Coca-Cola is increasing access to safe water supply, promoting sanitation and hygiene, and protecting and conserving local water resources in Mali and Malawi, with activities in several more African countries projected to start later this year. USAID is also currently developing other partnerships with the private sector that will provide improved water and sanitation services to millions of Africans.

USAID funding for water and sanitation in Africa has increased steadily over the past five years. In Fiscal Year (FY) 2006, USAID funding for water and sanitation in Africa will exceed the $50 million target set in the Agency's FY 2006 Appropriations Act, while also leveraging millions more in private sector funds. USAID will work to mobilize the hundreds of millions of dollars in private investment and philanthropic funding available for investment in this sector and this region.

sanitation) are connected to wastewater collection systems for which there is no treatment before discharge to open water bodies. Estimates suggest 90 percent of discharged wastewater in the developing world is not treated[52]. Concerns have been raised about the costs and environmental sustainability of improving sanitation to current industrialized country standards that focus on waterborne sewerage as the method of choice. Nevertheless, alternative technologies, such as those based on ecological sanitation, have only been tested at pilot scale. While the sanitation approaches in the section "Protection of Public Health," above, are focused on the demand stimulation for the household dimensions of sanitation, clearly the problem of sanitation at community- and higher scale merits increased attention.

- **Urban and peri-urban issues.** By 2010 more than 50 percent of the world's population will be living in cities. To meet the internationally agreed goals on water and sanitation 961 million urban dwellers must gain access to improved water supplies and over 1 billion must gain access to improved sanitation. Large populations and high population densities represent special challenges for basic service provision including safe water supply, sewage treatment and disposal, and environmental protection. They also provide a concrete context for action. Specialized approaches will be needed to improve the planning and mobilize the resources to meet human needs.

- **Adaptation to climate variability.** Many water providers are already thinking about ways to build systems that can withstand drier conditions and greater demand on municipal water systems. Other communities are investigating changing agricultural practices to conserve water and increasing planning and mitigation strategies for floods and other disasters. Adapting to climate variability in both the short- and long-term in order to increase water and food security requires building flexible municipal systems, increasing early warning of severe weather events, and better strategies to deal with impacts on water and agriculture.

- **Prevention of watershed contamination.** Numerous ecological assessments and international regimes recognize that further degradation of water supply quantity and quality will further stress the resources the world's water crisis and stretch the global resources. Therefore strategies to improve access to water are only complete when they incorporate a threat assessment and activities dedicated to protect the resources (headwaters, wetlands, estuaries, riparian zones). As the challenges posed by growing populations, decreasing water quality, and reduced ecological capacity to restore water resources mount, prevention of watershed contamination will require committed action.

[52] UNDP, UNEP, the World Bank, and the World Resources Institute. World Resources 2000-2001. Washington, D.C. 2000.

Annex A: Summary of U.S. Agency Missions and Capabilities in Water

The range of activity types related to water resources analysis, development and management currently carried out by USG agencies internationally is extremely broad, reflecting the recognition of U.S. leadership in many areas of water resources activity.

Most recently, the bulk of USG resources have been spent in the area of water supply and sanitation infrastructure in the two major geographic areas of activity, the Middle East and U.S. border areas. This heavy weighting of resources in a few capital-intensive projects gives a somewhat distorted picture of the ways U.S. capabilities are generally brought to bear across all the countries of the world, however. With a few exceptions, U.S. involvement in international water issues does not directly involve construction of large-scale water works or infrastructure. Rather, the USG, through its international agencies such as the Department of State, USAID, and PC, and through intermittent domestic agency participation, engages in activities such as the following:

- The collection, management, analysis, application, and dissemination of information;
- Integrated water resources management planning and execution at a watershed or basin scale;
- The development of processes, practices and technologies that encourage the sustainable development, use, and management of land and water resources and the transfer of related U.S. technology abroad;
- Capacity building in scientific, technical, financial, operations and management, policy, and legal aspects of water resources management;
- Securing or leveraging financing necessary to meet water resource management needs, including strengthening enabling environments for private sector investment;
- Water-related institution building and strengthening;
- Awareness raising and education;
- Development of participatory and democratic governance structures to ensure sustainable management of water resources; and
- Humanitarian assistance to address immediate water and sanitation needs.

Other areas of intervention include watershed or basin-level hydrogeological analysis and water resources planning and management; agricultural water quantity and quality; environmental protection and natural resources management; preparedness and response to extreme events;[53] climate forecasting and monitoring; the economic uses of water, including hydropower and fisheries; and management of dams, navigation channels, etc. Not surprisingly, while USAID is

[53] Some mitigation activities are also included in these figures, but the bulk of resources is devoted to restoration after the fact.

involved in the full breadth of activities, domestic agencies with special expertise typically are often focused in just one or two of these areas.

Table A.1. Summary of USG Agency Capabilities in the Water Sector

AGENCY	MISSION	CAPABILITIES
FOREIGN AFFAIRS AGENCIES		
U.S. Department of State	As the lead institution for the conduct of diplomacy and the establishment of foreign policy, the Department of State works to increase access to safe water and sanitation services; promote the sustainable management of water resources; remove water as a source of tension between or among countries, and use water as a diplomatic tool to build confidence and promote cooperation among countries. The Department of State also manages or coordinates a number of accounts that may support water-related assistance.	• Leadership on multilateral, regional, and bilateral processes and fora • Raising the profile linking diplomacy and development on water and water related issues • Leadership and coordination of U.S. policy development on international water • Representation of U.S. interests to foreign governments and international organizations
U.S. Agency for International Development	USAID is the lead foreign affairs agency responsible for the USG development and humanitarian assistance program. As such, it develops strategies, plans and implements a wide range of program activities in targeted countries, in concert with host governments and the private and NGO sectors in addition to carrying out humanitarian assistance. In carrying out its mandate, it works with a host of other USG agencies and the US private sector.	• Repository and clearinghouse for technical information on water resources management • In-country presence, perspective and long-term relationships to support the technical, managerial and diplomatic aspects of USG water resources efforts abroad • Water resources strategy formulation by USAID Missions • Water-related project planning and implementation oversight, and management of third party implementers • Facilitation of governance processes and policy development • Facilitation of financing mechanisms for improved water resources management • Provision of humanitarian assistance to address the immediate needs for water/sanitation, hygiene education and emergency health for natural and human caused disasters in addition to preparedness, prevention and mitigation activities.
Peace Corps	The Peace Corps sponsors volunteers in developing countries around the world to promote peace and friendship and sustainable development through direct assistance to communities. The agency strives to simultaneously help the people of interested countries in meeting their need for trained men and women; help promote a better understanding of Americans on the part of the peoples served; and help promote a better understanding of other peoples on the part of Americans.	• Technical support to water and sanitation, soil and water conservation, sustainable agriculture and forestry, and conservation that directly improve the quality of water resources management, especially in poorer communities. • Leveraging of modest levels of resources to assist in water resources management • Grassroots presence and perspective to support USG water resources efforts abroad

Department of Defense	The Department of Defense has a primary mission to ensure the military security of the United States throughout the world. Through its Office of the Undersecretary - Environmental Security has the responsibility to employ water resources expertise related to the successful implementation of military actions.	• Satellite imagery acquisition and interpretation for water resources assessment and forecasting and management • Technical support to hydrology and well drilling • Technical assistance in preventive health practices and land management and forestry • Provision of heavy logistics
Army Corps of Engineers (DOD)	The U.S. Corps of Engineers is engaged in planning (including decision support systems), design, construction, operation and maintenance of projects for navigation, flood damage reduction and flood plain management, coastal storm damage reduction, hydropower, water supply, emergency operations, and environmental protection and restoration.	• Planning, design engineering, construction management, and operation/maintenance of water resource projects, especially large civil works including hydropower projects, water supply projects, and navigation infrastructure (ports, harbors and channels) • Research and development related to water quantity and quality management • Data collection, research and development related to coastal, ocean, and hydrologic engineering; science and engineering in cold regions; geological and soil characteristics; structural engineering; and topographic aspects of water resources management • Improved planning methodologies to address economic, social, institutional and environmental needs in water resources planning policy, including development of decision-making software • Flood control and flood and storm damage reduction and mitigation, including floodplain planning, construction of flood protection projects, shore protection work, and disaster response • Environmental restoration related to ACE projects
Department of the Treasury	The Treasury Department is the lead agency responsible for U.S. participation in the international financial institutions. These include the multilateral development banks (MDBs), most of which finance substantial programs in support of water supply and sanitation. The also provide policy advice, capacity building, and sector analysis to help strengthen the operational and financial sustainability of water systems globally.	• Negotiation of MDB general capital increases and replenishment agreements • Leadership in establishing MDB priorities and strategies • Oversight of MDB implementation of operational policies, country strategies, and lending operations • Liaison with relevant USG agencies, the private sector, and NGOs • Coordination with other international and regional institutions and initiatives, such the G-8 and APEC

DOMESTIC AGENCIES		
Department of Agriculture		
Forest Service	The mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. US Forest Service International Programs promotes sustainable forest management and biodiversity conservation internationally.	• Research, technical expertise, and tools for land and water management, including: forest and grassland watershed management, fire planning, soil and water conservation, and hydrology. • Technical assistance and tools for the design of agriculture buffer areas. • Technical assistance for watershed assessments and watershed planning. • Partnership building for water resource planning and watershed management. • Technical assistance on road construction to protect watersheds • Train and mobilize personnel domestically to respond and mitigate foreign disasters, including drought and floods. • Train and provide technical expertise to partners overseas in emergency preparedness, response, and disaster mitigation, including drought and floods.
National Resource Conservation Service	The NRCS provides technical and financial assistance to help private land owners, agricultural producers, and others conserve their soil, water and other natural resources. They provide technical assistance based on sound science and suited to a customer's specific needs. They also provide financial assistance for many conservation activities.	• Manage natural resource conservation programs that provide environmental, societal, financial, and technical benefits. • Provide technical expertise in such areas as animal husbandry and clean water, ecological sciences, engineering, resource economics, and social sciences. • Provide expertise in soil science and leadership for soil surveys and for the National Resources Inventory, which assesses natural resource conditions and trends in the United States. • Provide technical expertise to foreign governments, and participate in international scientific and technical exchanges.
Foreign Agricultural Service	The Foreign Agricultural Service (FAS) works to improve foreign market access for U.S. products, build new markets, improve the competitive position of U.S. agriculture in the global marketplace, and provide food aid and technical assistance to foreign countries. The FAS goals for international development are to increase economic growth and reduce hunger through agricultural development, and to open agricultural markets and integrate developing countries into the global economy.	• International training, technical assistance, and other collaborative activities with developing and transitional countries to facilitate trade and promote food security • Trade capacity-building programs to increase the benefits to developing nations participating in global agricultural markets

Agricultural Research Service (ARS)	As the principal in-house research arm of the USDA, ARS conducts research to develop and transfer solutions to agricultural problems of high national priority and provides information access and dissemination to -- ensure high quality, safe food and other agricultural products, assess the nutritional needs of Americans, sustain a competitive agricultural economy, enhance the natural resource base and the environment, and provide economic opportunities to rural citizens, communities, and society as a whole.	• Design of on-farm and regional irrigation (drip, sprinkler, and surface) and drainage systems. • Integrated technologies for assessing impacts of soil salinity on drainage waters were developed to improve water quality • Design complete or modular water treatment plants to address both rural waste treatment plant needs as well as needs arising from confined animal operations • Risk assessment analysis of the impact of utilizing wastewater and predicting the impact on environmental quality through the use of its extensive environmental modeling capabilities • Capabilities and analytical expertise in identifying toxic chemicals and elements (i.e., boron, selenium etc) in waste water streams • Agricultural watershed management research to develop tools for managing watersheds by mitigating drought, forecasting water supplies, and making policy decisions • Water quality protection and management • Soil and water research • Global change related research by studying changes in weather and the water cycle at farm, ranch, and regional scales
Department of Commerce		
International Trade Administration	The ITA leads the Environmental Technologies Export Initiative of 1994, to enhance the competitiveness of U.S. envirotech companies globally and to increase U.S. envirotech exports. The Agency leads the initiative in close cooperation with other key members of the Trade Promotion Coordinating Committee (DOE, USAID, EPA, DOE, Export/Import Bank, TDA, etc.)., and promotes the following objectives: (1) implement the President's national export strategy to strengthen trade advocacy, trade promotion, and the Trade Promotion Coordinating Committee (2) More closely align trade objectives with U.S. foreign policy (3) Enforce U.S. trade laws and agreements to promote free and fair trade, expand trade, and promote law enforcement and compliance monitoring (4) Strengthen and institutionalize trade advocacy efforts, placing a special emphasis on the "Big Emerging Markets" without losing focus on mature markets.	• Advocacy by high-level USG officials to promote U.S. firms • Comprehensive information resources on all federal government export assistance programs and multilateral development bank programs and opportunities • Commercial officer presence in U.S. embassies around the world to assist in promoting U.S. envirotech firms abroad • Organization of U.S. business trade missions to potential markets around the world

National Oceanic and Atmospheric Administration	NOAA has technical responsibility stretching from the surface of the sun to the bottom of the ocean. Most of the Agency's work is directed to understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet economic, social, and environmental needs.	• Weather and Climate Forecasts – rainfall, floods, droughts, storms and related hazards • Climate Prediction - rainfall, floods, droughts, storms and related hazards, medium and long-term water availability, USGCRP water cycle initiative • Information - data acquisition, storage and dissemination • River and Flood Forecasting - river stage monitoring, hydrology and aquifer recharge • Remote sensing - products which identify landcover, water presence/availability, snowpack and connection to runoff and reservoir level modeling, drought and desertification, and coastal and marine events related to water such as movement of harmful algal blooms • Coastal and Estuarine Management - water quality, habitat, hazard mitigation, storms, ports (navigation issues such as dredging and siltation), closely related to watershed management, estuarine and coastal reserves, sanctuaries, and protected areas, coral reef ecosystem monitoring and management • Land-based sources of marine degradation - the effects of land-based activities, primarily, on the nearshore and coastal environments, such as sewage, agricultural runoff, runoff from roads etc, industrial production, harmful algal blooms, physical alteration, habitat destruction • Habitat alteration - water related changes to coastal and marine ecosystems, including quality of introduced fresh water (pollution, temperature), and the quantity • Aquaculture - water quality, impacts on environment, harmful algal blooms
Department of Energy	The Department of Energy mission includes national security, science and technology, energy security and environmental quality. The agency has made a long-term investment in water-related technical questions in recognition that water and energy are two major elements in sustainable development and are inextricably linked.	• Technical assistance in groundwater contamination, water monitoring, wastewater treatment and pollution prevention • Hydrogeological and contaminant transport modeling • Radioactive waste management • Water and energy conservation technologies • Tools for measurement, remote sensing, and monitoring water • Modeling and high-performance computing capacity • Renewable energy technologies for water pumping • Atmospheric and ocean physics and global impacts research.

Department of Health and Human Services		
Centers for Disease Control and Prevention	The HHS/CDC is the sentinel organization for the health of people in the United States and throughout the world and strives to protect people's health and safety, provide reliable health information, and to improve health through strong partnerships. HHS/CDC accomplishes this mission by working with partners throughout the nation and the world to monitor health, detect and investigate health problems, conduct research to enhance prevention, develop and advocate sound public health policies, implement prevention strategies, promote healthy behaviors, foster safe and healthful environments, and provide leadership and training. Those functions are the backbone of the HHS/CDC mission. The steps needed to accomplish this mission are based on scientific excellence, requiring well-trained public health practitioners and leaders dedicated to high standards of quality and ethical practice.	• Measuring and monitoring public health effects from contaminated drinking water and recreational water • Waterborne disease outbreak surveillance and investigations • Support for local and state health departments delivering water-related programs • Water security, bioterrorism and emergency response support to local, state and other federal agencies • Epidemiologic investigations related to microbial, chemical and other contaminants in drinking water • Development and evaluation of water treatment and monitoring technology • Evaluation of waterborne disease prevention programs • Instituting WHO Water Safety Plans in communities

Department of the Interior		
National Park Service	The National Park Service preserves the unimpaired natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world. The Service works in 378 areas covering more than 83 million acres in 49 States, the District of Columbia, American Samoa, Guam, Puerto Rico, Saipan, and the Virgin Islands.	• Planning, design, construction and maintenance of park facilities • Land use planning and management • Habitat protection and enhancement • Cultural and historic preservation • Environmental and cultural interpretation • Archaeological, historical, and ecological research • Law enforcement in park areas • Volunteer coordination and public outreach

Bureau of Reclamation	The Bureau of Reclamation was originally founded to develop water resources in the arid and semiarid western states of the U.S., including maximizing water availability for irrigation and hydroelectric power generation. In recent decades, the Bureau has been making the transition from water development to water management, and is increasingly managing its projects to address an array of competing demands including irrigation, hydropower generation, municipal and industrial water supply, ecosystem-related needs, flood control and recreation. This has entailed greater emphasis on water reclamation and reuse, maintaining water quality, and encouraging water conservation.	• Cooperative conservation for the protection and enhancement of fish and wildlife habitat, addressing endangered species issues, and restoring migrating fish populations • Dam safety programs and maintenance and modernization of structures • Nonstructural operational improvements including revenue-setting and water transfer arrangements (water marketing) • Hydropower design, operation and maintenance • Water resources research and technology transfer • Building collaborative partnerships through community-based approaches to resolve challenges and conflicts in water management • Multiple-purpose reservoir operations • River basin management decision-support systems • Drought modeling and mitigation training • Water conservation, recycling and reuse • Alternative dispute resolution • Environmental impact assessment •
Geological Survey	The USGS provides reliable, impartial, timely information needed to understand the nation's water resources. USGS actively promotes the use of this information by decision-makers to: (1) minimize the loss of life and property as a result of water-related natural hazards such as floods, droughts, and land movement; (2) effectively manage groundwater and surface water resources for domestic, agricultural, commercial, industrial, recreational, and ecological uses; (3) protect and enhance water resources for human health, aquatic health, and environmental quality; and (4) contribute to wise physical and economic development of the nation's resources for the benefit of present and future generations	• Basic hydrologic data collection (both quantity and quality) • Assessment of water availability, water quality, and water-related hazards at scales ranging from single data-collection sites to regional and national levels • Interpretive study and predictive model development to describe the potential consequences of water-related management actions (e.g., altered flow regimes caused by reservoir operations and diversions, groundwater withdrawals, exposure to agricultural chemicals, etc.) • New methodologies for acquiring water resources information, including methods of data collection, quality assurance, data management, laboratory analysis, data analysis and simulation modeling • State of the art hydrologic system management through computer models and GIS • Research and data collection on surface water/ groundwater interactions • Technology transfer, training, institutional strengthening

Fish and Wildlife Service	The U.S. Fish and Wildlife Service has a primary goal to conserve, protect and enhance fish and wildlife and their habitats for the continuing benefit of the American people. Among its key functions, the Service enforces federal wildlife laws, protects endangered species, manages migratory birds, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, and helps foreign governments with their international conservation efforts.	• Habitat restoration and protection for endangered and threatened species • Restoration of fisheries • Technical assistance in management of wildlife parks and reserves • Legal and regulatory development for the protection of fish and wildlife and their habitats • Implementation of international treaties, conventions and laws related to biodiversity, including CITES
Environmental Protection Agency	EPA is one of the primary government organizations responsible for the protection of human health and natural ecosystems. The Agency plays a major role in the regulation, protection and improvement of water resources and supplies of the United States.	• Legal, regulatory and standards development and enforcement • Oversight of design, construction and maintenance of sewage treatment facilities • Technical approaches for ensuring safe drinking water and improved water quality • Techniques and approaches for preventing and reducing point and non-point pollution • Water resources program development • Capacity building for environmental professionals • Community participation approaches in watershed protection and drinking water source improvement • Partnership building with other units of governments and outside organizations
Federal Emergency Management Agency	The Federal Emergency Management Agency is an independent agency of the federal government, reporting to the President. FEMA's mission is to reduce loss of life and property and protect our nation's critical infrastructure from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery. FEMA provides support to prevent and reduce risk before disaster strikes, thereby lowering the amount of federal money spent on picking up the pieces.	• Disaster recovery services including resources and personnel to perform necessary functions, such as transporting food and potable water to the area, assisting with medical aid and temporary housing for those whose homes are uninhabitable, and providing generators for electric power to keep hospitals and other essential facilities in operation. • Disaster planning, and development of mitigation programs • Training of emergency managers and local officials, including planning and managing disaster 'exercises' • Public outreach to better prepare for disasters • Technical assistance to communities to promote safe and wise land-use planning in floodplains • Management of federal flood insurance program

National Aeronautics and Space Administration	NASA seeks to expand frontiers in air and space through exploration and innovation, serving America and benefiting the quality of life on Earth. Among its primary objectives are: (1) To advance and communicate scientific knowledge and understanding of the Earth, the solar system, and the universe and use the environment of space for research; (2) To explore, use, and enable the development of space for human enterprise; and (3) To research, develop, verify, and transfer advanced aeronautics, space, and related technologies	• Remote-sensing technology for multiple applications, including data collection from satellites, aircraft, balloons, and ground research • Research and modeling on weather behavior, and the causes and patterns of natural disasters (floods, hurricanes, etc,) • Long-term measurements for global change research • Crop assessment and analysis to improve efficiency in the use of agricultural chemicals, reduce pollution and increase productivity • Assessment of aquatic ecosystems including coastal marshes and estuaries

National Science Foundation	The NSF is the nation's leader and steward of academic research in science and engineering. The Agency does not perform research internally, and instead provides funding to academic institutions and other non-federal organizations to conduct research in a wide variety of topics related to the hydro sciences. Most funding provided by NSF is researcher-driven and evaluated through a worldwide network of peer reviewers.	• Maintenance of a register of the current interests and qualifications of scientific and technical personnel and resources in the U.S. • Close working relationships with the scientific and technical community in the U.S. and abroad • Innovative, independent research in water resources topic areas including water contamination (anthropogenic and natural), causes and effects of desertification and extreme climate events, snow pack evaluation and studies, groundwater infiltration and recharge, complex geochemical and biogeochemical systems using isotopic tracers, and movement of water in karstic systems • Research in other fields related to water resources management, including chemistry, physics, geological sciences, meteorology, biological sciences, computer science, engineering and the social sciences. • Investigation into the social, cultural and economic aspects of water resources as they relate to decision, risk management, economics and law

Annex B: USAID Funding for Water[54]

B.1 Foreign assistance legislation and USAID

The Foreign Assistance Act of 1961, as amended, is the major law authorizing foreign economic assistance programs. The FAA provides the policy framework within which all economic aid is furnished, along with the legal powers (authorities) to implement FAA assistance programs. Other legislation—such as the FREEDOM Support Act (FSA) for the states of the former Soviet Union, and Support for East European Democracies Act (SEED Act), Public Law (PL) 480 Title II for food aid, and the 2003 U.S. Leadership Against HIV/AIDS, Tuberculosis, and Malaria Act—authorize additional foreign aid programs. Some of these acts amend the FAA or rely on its authorities. Others are stand-alone legislation authorizing additional foreign assistance programs. In addition to this authorizing legislation, annual appropriations acts provide funding for FAA and other aid programs.[55]

Both authorizing and appropriations legislation provide various authorities that permit considerable flexibility in managing assistance programs. However, they also place limits on how and where particular programs may be administered. In addition to the enacted law itself, reports accompanying the various pieces of legislation provide guidance to the executive branch on the congressional intent behind provisions in the law or how Congress wishes it to be implemented.

B.2 Authorities

The FAA gives USAID the basic authority to provide development assistance. Until 1992, Congress appropriated funds separately for each sector (e.g., agriculture or education). To increase flexibility, in 1992, sector-specific appropriations were combined into fewer accounts. By 2004, there were two: Development Assistance (DA), and Child Survival and Health Programs (CSH). A separate Global HIV/AIDS Initiative account is managed directly by the HIV/AIDS Coordinator in the Department of State, and the SEED and FSA accounts are managed by the State Department's Coordinator of Assistance to Europe and Eurasia. The FAA also contains authorizations for other programs, such as small-enterprise credit and international disaster assistance.

B.3 Provisions limiting program administration

Most limitations affecting foreign assistance programs are set out in appropriations legislation and in reports issued by Congress's appropriations committees.

- Before the USG can fund specified activities or activities for specific countries, it must notify Congress in advance. USAID accomplishes this via USAID's Annual Report.

[54] Souce: USAID.

[55] Note that this guidance was prepared prior to passage of the Water for the Poor Act off 2005, which is an additional authorizing legislation not mentioned here.

Separate notification is required for certain programs and for any funding increase of 10 percent or more over the level previously notified. Congressional notifications are sent to the two authorizing and appropriations committees 15 days before program funds are obligated. (An obligation is a binding agreement that budgeted funds may be spent.) During this waiting period, congressional committees may place "holds" on the proposed obligation of funds, thus triggering consultation between USAID and Congress.

- There are prohibitions on assistance to certain countries, such as those that support international terrorism or engage in gross violations of internationally recognized human rights; those that are in arrears on their loan repayments to the United States; or those whose elected head of government has been overthrown by a military coup.
- There are provisions that limit or prohibit USG assistance for certain activities or programs, such as those that pay for abortion as a family planning method.
- Earmarks force the USG to spend minimum amounts from certain accounts—for specific purposes, or in specific countries—reducing the amount that can be spent on other programs or in other countries. For USAID, the more significant earmarking is in committee reports. In 2001 there were approximately 250 statutory and report-language earmarks and directives affecting development assistance.
- USAID's operating expenses (administrative costs) are segregated from funds for program activities in each year's appropriations act (i.e., they are listed as separate line items). As the number of programs has grown, Congress has authorized USAID to use some program funds for operating expenses rather than appropriating extra money for these costs.

B.4 Provisions allowing flexibility in administration

Congress has enacted several types of provisions that allow flexibility in administration of foreign aid programs:

- Notwithstanding authorities allow several programs to be implemented "notwithstanding any provision of law" (i.e., without regard to certain legal restrictions). Such an authority may exempt USAID from some restrictions on the types of programs it may fund or, under certain circumstances, may allow USAID to assist a country that is normally ineligible for aid. Programs with total or partial notwithstanding authority include disaster assistance, democratization, Child Survival and Health, transition assistance, emergency food aid, and all aid to Afghanistan and the former Soviet Union.
- Transfer authorities allow the shifting of funds, within certain percentage limitations, between functional development assistance accounts (e.g., from DA to CSH) and, as noted above, from development assistance to USAID's operating expenses. The FAA contains other transfer authorities affecting non–development assistance accounts.
- Extraordinary waiver authorities allow the president to use up to $250 million in economic assistance funds (not more than $50 million in any one country) without regard to certain legal restrictions—if he determines that it is important to the security interests

of the United States. A similar authority allows the president to use $25 million in any fiscal year to meet unanticipated contingencies.

B.5 Overview of budget accounts

USAID manages a range of budget accounts that are organized largely along functional and regional lines. Besides those it manages directly, the Agency co-manages several accounts with the State Department. It also administers a growing amount of funding transferred from other agencies' accounts, such as the Millennium Challenge Account and the Global HIV/AIDS Initiative. All of these accounts, except PL 480 Title II, are appropriated in Congress's yearly Foreign Operations bill. In FY05, the following accounts were managed by USAID:

- Child Survival and Health programs (CSH): CSH programs expand basic health services and strengthen national health systems to significantly improve people's health, especially that of women, children, and other vulnerable populations.
- Development Assistance (DA): DA provides sustained support to help countries acquire the knowledge and resources that enable development and nurture indispensable economic, political, and social institutions.
- Transition Initiatives (TI): TI programs help countries in crisis transition to democracy and encourage long-term development by promoting democratic institutions and processes, revitalizing basic infrastructure, and fostering peaceful conflict resolution.
- International Disaster and Famine Assistance (IDFA): IDFA funds humanitarian relief, rehabilitation, and reconstruction assistance in response to natural and manmade disasters. IDFA also supports famine prevention and relief activities.
- PL 480 Title II (food aid): PL 480 Title II funds are appropriated to the Department of Agriculture and administered by USAID. The program uses abundant U.S. farm resources and food processing capabilities to enhance food security in the developing world by providing nutritious agricultural commodities.

In FY05, the following accounts were jointly managed by USAID and the State Department:

- Economic Support Fund (ESF): ESF promotes U.S. economic and political foreign policy interests by financing economic stabilization programs, supporting peace negotiations, and assisting allies and countries that are in transition to democracy. USAID implements most ESF-funded programs, with overall foreign policy guidance from the State Department.
- Andean Counterdrug Initiative (ACI): ACI supports a comprehensive strategy to reduce the flow of drugs to the United States and prevent instability in the Andean region. The account is appropriated to the State Department, which transfers part of the funding to USAID to manage development programs in Bolivia, Colombia, Ecuador, and Peru that offer alternatives to the drug trade.
- FREEDOM Support Act (FSA): FSA facilitates the democratic and economic transition of the independent states of the former Soviet Union, promotes regional stability through

security and law enforcement programs, and supports emerging democratic organizations and market-based institutions in the region.

- Assistance for Eastern Europe and the Baltic States (AEEB): AEEB promotes local and regional stability and supports the region's transition into the European and transatlantic mainstream. AEEB also supports postconflict, health, and environment programs, as well as activities to reduce the threat of organized crime and HIV/AIDS. This account is also known as Support for East European Democracy (SEED).

B.6 USAID water obligations for FY2002-2006

This includes obligations related to the water for the poor initiative as well as other activities related to disaster preparedness.

Table B.1. Estimated USAID Water Obligations Fiscal Years (FY) 2002-2006. All data provided by USAID.
(Dollars in Millions)

	Fiscal Year					
Estimated USAID Water Obligations - FY 2002-2006	**2002**	**2003**	**2004**	**2005**	**2006**	**TOTAL**
Water Supply, Sanitation and Wastewater Management	$215.343	$374.310	$585.591	$279.515	$260.870	$1,715.629
Watershed Management	133.399	109.400	82.471	67.359	65.285	457.914
Water Productivity	61.880	115.636	96.018	47.020	29.301	349.855
Disaster Preparedness	31.932	20.597	9.996	6.755	0.819	70.099
TOTAL	$442.554	$619.943	$774.076	$400.649	$356.275	$2,593.497

B.7 USAID water obligations for FY2005

See charts on following page.

Table B.2. Estimated USAID Obligations for Water for the Poor Initiative by Funding Account Fiscal Year 2005. All data provided by USAID.

Dollars Millions

Region and Theme		AEEB/ FSA (EE) or ACI (LAC)	CSH	DA	ESF	IDFA	PL 480	Other	Total All Fund Accounts	Notes
Africa	WSSWM		$4.161	$4.867	$0.916	$63.926	$5.094		$78.964	
	Watershed Management			8.546			1.069		9.615	
	Water Productivity		0.500	10.207			2.205		12.912	
	Total Africa	**$0.000**	**$4.661**	**$23.620**	**$0.916**	**$63.926**	**$8.368**	**$0.000**	**$101.491**	
Asia and Near East	WSSWM		$2.424	$7.640	$20.537	$3.756	$0.600	$41.775	$76.732	TRRF to Regional Bureau, India, Indonesia, Maldives, Sri Lanka; Afghanistan Supplem.
	Watershed Management			9.460	0.692			0.750	10.902	TRRF to Thailand
	Water Productivity			7.229	4.470				11.699	
	Total Asia and Near East	**$0.000**	**$2.424**	**$24.329**	**$25.699**	**$3.756**	**$0.600**	**$42.525**	**$99.333**	
Egypt, Iraq, Jordan, West Bank/Gaza (WB/G)	WSSWM				$3.100	$25.320		$54.947	$83.367	IRRF; West Bank/Gaza Supplemental
	Watershed Management				9.500			5.880	15.380	Egypt Supplemental
	Water Productivity							1.667	1.667	IRRF
	Total Egypt, Iraq, Jordan, WB/G	**$0.000**	**$0.000**	**$0.000**	**$12.600**	**$25.320**	**$0.000**	**$62.494**	**$100.414**	
Europe and Eurasia	WSSWM	$6.354			$1.000	$1.473			$8.827	
	Watershed Management	4.100			0.500				4.600	
	Water Productivity	6.412							6.412	
	Total Europe/Eurasia	**$16.866**	**$0.000**	**$0.000**	**$1.500**	**$1.473**	**$0.000**	**$0.000**	**$19.839**	
Latin America and the Caribbean	WSSWM	$16.725	$1.448	$1.011	$2.160	$1.608	$2.733		$25.685	
	Watershed Management	0.130	0.027	21.758	2.975		0.050		24.940	
	Water Productivity	0.035	0.050	1.864	8.560		0.318		10.827	
	Total Latin America/Caribbean	**$16.890**	**$1.525**	**$24.633**	**$13.695**	**$1.608**	**$3.101**	**$0.000**	**$61.452**	
Central Programs	WSSWM		$2.400						$2.400	
	Watershed Management			$5.462					5.462	
	Water Productivity			3.503					3.503	
	Total Central Programs	**$0.000**	**$2.400**	**$8.965**	**$0.000**	**$0.000**	**$0.000**	**$0.000**	**$11.365**	
Total WSSWM All Regions		**$23.079**	**$10.433**	**$13.518**	**$27.713**	**$96.083**	**$8.427**	**$96.722**	**$275.975**	
Total Watershed Mgmt All Regions		**$4.230**	**$0.027**	**$45.226**	**$13.667**	**$0.000**	**$1.119**	**$6.630**	**$70.899**	
Total Water Productivity All Regions		**$6.447**	**$0.550**	**$22.803**	**$13.030**	**$0.000**	**$2.523**	**$1.667**	**$47.020**	
Total All Categories and All Regions		**$33.756**	**$11.010**	**$81.547**	**$54.410**	**$96.083**	**$12.069**	**$105.019**	**$393.894**	

Acronyms: ACI = Andean Counterdrug Initiative AEEB = Assistance to Eastern Europe and Baltic States EE = Europe and Eurasia FSA = Freedom Support Act LAC = Latin America and the Caribbean CSH = Child Survival and Health Fund DA = Development Assistance DCA = Development Credit Authority ESF = Economic Support Fund IDFA = International Disaster and Famine Assistance IRRF = Iraq Relief and Reconstruction Funds PL 480 = Title II Food for Peace TRRF - Tsunami Relief and Reconstruction WSSWM = Water Supply, Sanitation, and Wastewater Management

Table B.3. Estimated USAID Obligations for Water for the Poor Initiative by Country and Thematic Area for Fiscal Year 2005. All data provided by USAID.

Dollars Millions

Region	Country or Program	Water Supply, Sanitation & Wastewater Management	Watershed Management	Water Productivity	Total Water Obligations	Total Country Allocation	Water % of USAID Total	Notes	Amount of Supplemental Funds
Africa	Angola	0.500	0.000	0.500	1.000	48.554	2.06		
	Burundi	1.408	0.100	0.183	1.691	4.694	36.02	h	
	Chad	1.030	0.000	0.000	1.030	15.928	6.47	h	
	Cote d'Ivoire	0.600	0.000	0.000	0.600	4.730	12.68	h	
	DR Congo	0.153	0.000	0.000	0.153	39.790	0.38	h	
	Djibouti	0.000	0.000	0.000	0.000	0.984	0.00		
	Eritrea	3.145	0.000	0.700	3.845	42.679	9.01	h	
	Ethiopia	7.276	.710	4.890	12.876	151.586	8.49	h	
	Ghana	2.339	1.069	0.005	3.413	6.250	54.61		
	Guinea	0.055	1.205	0.000	1.260	22.052	5.71		
	Kenya	2.816	0.200	0.000	3.016	133.416	2.26	h	
	Liberia	0.878	0.000	0.000	0.878	42.127	2.08	h	
	Madagascar	0.338	1.320	0.210	1.868	31.946	5.85		
	Malawi	0.000	0.629	0.517	1.146	37.817	3.03		
	Mali	0.490	0.732	2.197	3.419	34.319	9.96		
	Mozambique	1.738	0.000	0.442	2.180	72.999	2.99	h	
	Nigeria	0.200	0.000	0.500	0.700	89.683	0.78		
	Rwanda	0.000	0.000	0.200	0.200	48.996	0.41		
	Senegal	0.150	0.000	0.300	0.450	26.873	1.67		
	Somalia	2.520	0.000	1.000	3.520	15.764	22.33	h	
	South Africa	0.198	0.000	0.000	0.198	98.544	0.20		
	Sudan	42.627	0.000	0.000	42.627	241.680	17.64	h	
	Tanzania	0.000	0.659	0.018	0.677	55.684	1.22		
	Uganda	7.757	0.020	0.500	8.277	137.549	6.02	h	
	Zambia	0.460	0.000	0.000	0.460	89.881	0.51		
	Zimbabwe	1.548	0.000	0.500	2.048	15.218	13.46	h	
	RCSA	0.000	2.096	0.000	2.096	23.172	9.05		
	REDSO/ESA	0.438	0.337	0.000	0.775	34.621	2.24	h	
	WARP	0.000	0.000	0.250	0.250	39.865	0.63		
	AFR Regional Programs	0.000	0.538	0.000	0.538	183.246	0.29		
	Total Africa	**78.964**	**9.615**	**12.912**	**101.491**	**1838.966**	**5.65**		

Region	Country or Program	Water Supply, Sanitation & Wastewater Management	Watershed Management	Water Productivity	Total Water Obligations	Total Country Allocation	Water % of USAID Total	Notes	Amount of Supplemental Funds
Asia & Near East	Afghanistan	30.192	0.000	0.000	30.192	464.316	6.50	h	
	Bangladesh	1.020	1.550	4.077	6.647	75.787	8.77		
	India	7.850	1.200	0.250	9.300	140.751	6.61	h	
	Indonesia	7.420	4.798	0.000	12.218	146.309	8.35	h	
	Lebanon	12.100	0.000	0.000	12.100	35.220	34.35		
	Maldives	0.555	0.000	0.000	0.555	0.555	100.00	h	
	Morocco	0.000	0.000	0.000	0.000	25.840	0.00		
	Nepal	0.151	0.000	3.902	4.053	39.500	10.26		
	Pakistan	6.300	0.000	0.500	6.800	347.600	1.96		
	Philippines	0.749	2.052	2.970	5.771	89.096	6.48		
	Sri Lanka	9.447	0.000	0.000	9.447	16.994	55.59		
	Thailand	0.000	0.830	0.000	0.830			e	
	Vietnam	0.178	0.472	0.000	0.650	18.620	3.49	h	
	Yemen	0.670		0.000	0.670	14.880	4.50		
	ANE Regional	0.100	0.000	0.000	0.100	151.666	0.00	h	
	Total Asia & Near East	**76.732**	**10.902**	**11.699**	**99.333**	**1567.134**	**6.34**	a	

Egypt, Jordan Iraq, and West Bank/Gaza	Country or Program	Water Supply, Sanitation & Wastewater Management	Watershed Management	Water Productivity	Total Water Obligations	Total Country Allocation	Water % of USAID Total	Notes	Amount of Supplemental Funds
	Egypt	2.100	8.550	0.000	10.650	530.720	2.01		
	Jordan	1.000	2.000	0.000	3.000	248.000	1.21		
	Iraq	28.604	3.330	1.667	33.601	662.734	5.07	e, c	IRRF = $662.734
	West Bank/Gaza	51.663	1.500	0.000	53.163	74.400	71.46		
	Total - Egypt, Jordan, Iraq, & West Bank/Gaza	**83.367**	**15.380**	**1.667**	**100.414**	**1515.854**	**6.62**		

Europe & Eurasia	Country or Program	Water Supply, Sanitation & Wastewater Management	Watershed Management	Water Productivity	Total Water Obligations	Total Country Allocation	Water % of USAID Total	Notes	Amount of Supplemental Funds
	Albania	0.055	0.000	0.010	0.065	28.000	0.23		
	Armenia	1.361	1.150	0.200	2.711	74.400	3.64		
	Azerbaijan	0.200	0.800	0.000	1.000	37.760	2.656		
	Bosnia and Herzegovina	0.323	0.000	0.000	0.323	41.000	0.79		
	Croatia	0.000	0.000	0.030	0.030	22.000	0.14		
	Cyprus	1.000	0.500	0.000	1.500	13.392	11.20		
	Georgia	0.555	0.675	3.207	4.437	87.200	5.09	h	
	Kazakhstan	0.000	0.080	0.165	0.245	26.690	0.92		
	Kosovo	0.525	0.000	0.000	0.525	79.550	0.66		
	Kyrgyzstan	0.000	0.080	0.510	0.590	36.100	1.63		
	Macedonia	0.000	0.000	0.000	0.000	36.750	0.00		
	Moldova	0.230	0.000	0.050	0.280	17.510	1.60		
	Montenegro	1.330	0.000	0.000	1.330	19.850	6.70		
	Serbia	0.350	0.000	0.000	0.350	73.450	0.48		
	Romania	0.200	0.950	0.000	1.150	28.500	4.04		
	Tajikistan	0.000	0.040	0.500	0.540	41.260	1.31		
	Turkmenistan	0.000	0.000	0.200	0.200	7.010	2.85		
	Ukraine	0.900	0.000	0.000	0.900	135.620	0.66		
	Uzbekistan	0.000	0.040	1.440	1.480	31.500	4.70		
	CAR Regional Program	0.000	0.000	0.100	0.100	2.330	4.29		
	Eurasia Regional Program	0.200	0.000	0.000	0.200	41.800	0.48		
	Europe Regional Program	0.200	0.285	0.000	0.485	36.810	1.32		
	Total - Europe & Eurasia	**7.429**	**4.600**	**6.412**	**18.441**	**918.782**	**2.01**		

Latin America & the Caribbean	Country or Program	Water Supply, Sanitation & Wastewater Management	Watershed Management	Water Productivity	Total Water Obligations	Total Country Allocation	Water % of USAID Total	Notes	Amount of Supplemental Funds
	Bolivia	1.889	0.390	0.035	2.314	94.095	2.46	d	ACI = $41.664
	Brazil	0.000	0.000	0.000	0.000	17.140	0.00		
	Colombia	8.024	0.000	0.000	8.024	124.694		d, e	ACI = $124.694
	Dominican Republic	0.244	0.000	0.000	0.244	23.192	1.05		
	Ecuador	4.960	1.850	0.868	7.678	36.036	21.31	d	ACI = $14.88
	El Salvador	0.423	1.482	0.106	2.011	34.565	5.82		
	Guatemala	2.160	0.050	0.308	2.518	46.481	5.42		
	Guyana	0.050	0.000	0.000	0.050	11.359	0.44	h	
	Haiti	3.058	2.975	8.500	14.533	144.199	10.08	h	
	Honduras	0.250	3.478	0.250	3.978	48.913	8.13		
	Jamaica	1.197	1.319	0.550	3.066	17.270	17.75		
	Mexico	0.100	1.930	0.000	2.030	31.333	6.48		
	Nicaragua	0.179	0.000	0.010	0.189	47.068	0.40		
	Panama	0.200	4.896	0.200	5.296	8.101	65.37		
	Paraguay	0.045	0.087	0.000	0.132	8.704	1.52		
	Peru	2.906	0.064	0.000	2.970	101.225	2.93	d	ACI = $53.866
	Caribbean Regional Program	0.000	0.000	0.000	0.000	19.402	0.00		
	Central America Regional Program	0.000	3.966	0.000	3.966	18.331	21.63		
	Latin America Regional Program	0.000	2.453	0.000	2.453	75.243	3.26		
	Total - Latin America & the Caribbean	**25.685**	**24.940**	**10.827**	**61.452**	**907.351**	**6.77**		

Central Programs	Country or Program	Water Supply, Sanitation & Wastewater Management	Watershed Management	Water Productivity	Total Water Obligations	Total Country Allocation	Water %of USAID Total	Notes	Amount of Supplemental Funds
	Democracy, Conflict & Humanitarian Assistance/Office of Disaster Assistance	0.000	0.000	0.000	0.000	232.748	0.00	g (% of all DCHA)	IRRF = $237.171
	EGAT/Water Team	0.000	3.940	0.000	3.940				
	EGAT/Biodiversity	0.000	1.250	0.000	1.250				
	EGAT/ESP - IWMI Core Support	0.000	0.272	0.553	0.825	156.785	5.72	(% of all EGAT)	
	EGAT/ESP - WorldFish Center	0.000	0.000	0.800	0.800				
	EGAT/AG Aquaculture CRSP	0.000	0.000	2.150	2.150				
	Poverty Reduction/Urban Programs		0.000	0.000	0.000				
	GH/Point of Use Water Quality (Safe Water System)	0.000	0.000	0.000	0.000	424.636	0.57	(% of all GH)	
	GH/Environmental Health Support	2.400	0.000	0.000	2.400				
	Total - Central Programs	**2.400**	**5.462**	**3.503**	**11.365**	**814.169**	**1.40**		

TOTAL-ALL PROGRAMS (1)	**274.277**	**70.899**	**47.020**	**392.196**	**7513.937**	**5.19**		
TOTAL - Less Iraq	245.673	67.569	45.353	358.895	6851.203	5.23		

ACRONYMS: SUPP = Supplemental Appropriation IRRF = Iraq Relief and Reconstruction Funds ACI = Andean Counterdrug Initiative ERF = Emergency Response Funds

a. Less Egypt, Jordan, Iraq, and West Bank/Gaza

b. Total USAID Country Allocation includes Supplemental

c. Total USAID Country Allocation includes Iraq Relief and Reconstruction Funds (IRRF funds)

d. Total USAID Country Allocation includes Andean Counterdrug Initiative (ACI)

e. Total USAID Country Allocation includes ERF funds

f. No USAID Total Country Allocation figures available

g. DCHA allocations (from IDFA account) are included in country totals. Total DCHA allocation is less money allocated to countries.

h. Total USAID Country Allocation and Water Obligation includes IDFA funds.

Notes: (1) Total Country Allocations include only countries and central Bureaus where water activities are funded.

Annex C: Strategic Planning of USAID Water and Sanitation Activities in Africa

1. Introduction

Drinking water supply and sanitation activities are crucial parts of U.S. Agency for International Development (USAID) programs throughout Africa. Increased access to improved water and sanitation has many benefits: a significant reduction in disease; averted health-related costs and time savings associated with having water and sanitation facilities closer to home. Water and sanitation interventions are also cost-effective: a recent WHO cost-benefit analysis found that every $1 invested in providing improved access to water and sanitation activities yields an economic return of $3 to $34.

The majority of USAID's support for water supply and sanitation in recent years has been as a key part of humanitarian response programs established to assist populations subjected to environmentally-induced or conflict-related crises. Water and sanitation activities within development-focused programs have largely been programmed as integral parts of health, education, natural resources management, economic growth, and democracy and governance programs, which themselves reflect region- and country-specific strategic development priorities. In Fiscal Year 2006, the USAID Bureau for Africa established a new regional program focused on water and sanitation activities in Africa, reflecting in part a greater commitment to and higher visibility of this sector. This has also afforded the opportunity to take greater advantage of partnership opportunities that leverage USAID's limited resources and to develop a strategic water program.

2. Current USAID Activities in Water Supply and Sanitation in Africa

USAID's Fiscal Year (FY) 2006 water and sanitation activities in Sub-Saharan Africa are summarized in Chapter 5, and are detailed in the table below. The programs highlighted in grey (Kenya, Somalia, USAID/West Africa and Africa Regional) together make up a new set of Bureau for Africa water and sanitation activities, established this year to assure a substantial increase in planned (non-emergency response) water and sanitation activities in this region.

All activities listed in the table meet the criteria for "drinking water and related activities," in response to Congressional direction in USAID's FY 2006 Appropriations Act for at least $50 million in such activities in Africa. This list excludes other water-related activities in the Africa region, such as freshwater and coastal watershed management, fisheries, disaster preparedness, and irrigation, which will account for more than $15 million in additional USAID activities in Africa in FY 2006.

The majority of USAID's water and sanitation activities this fiscal year are expected to be provided through emergency humanitarian assistance efforts, wherein water supply and sanitation facilities are provided to populations temporarily in crisis because of natural or human events. This reflects the continuing urgency of to address emergency water shortages. The nature of other water supply and sanitation activities varies by program.

Table C.1: USAID Drinking Water Supply Projects and Related Activities in Africa -- FY 2006

Country, Mission, or Office	Water Obligation Estimate ($ million)	Description
Burundi	0.225	Drinking water supply and sanitation facilities for community health centers and improvement of water sources for human consumption.
Djibouti	0.200	Drinking water supply and sanitation as part of Education and Health programs.
Eritrea	0.961	Drinking water supply and sanitation.
Ethiopia	0.700	Drinking water supply and sanitation.
Ghana	1.349	Drinking water supply and sanitation as part of the Health program.
Guinea	0.109	Drinking water supply as part of the Natural Resources Management program.
Kenya	4.172	Address the long-term need for clean water and improved sanitation, particularly in the drought-affected areas of northern Kenya.
Liberia	0.150	Drinking water supply and sanitation under the Community Revitalization and Reintegration program.
Madagascar	0.797	Drinking water supply and sanitation as part of the Health program.
Mali	0.300	Drinking water supply, sanitation, and wastewater treatment, as part of the Democracy and Governance and the Economic Growth programs.
Mozambique	0.392	Drinking water supply and sanitation, as part of the Health and Rural Incomes program.
Nigeria	0.250	Drinking water supply and sanitation, as part of the Basic Education and Health Care program.
Somalia	2.600	Address the short- and long-term need for clean water and improved sanitation, particularly in drought-affected areas.
South Africa	0.750	Drinking water supply and sanitation, as part of the Housing and Municipal Services program.
Uganda	0.150	Drinking water supply and sanitation, as part of the Food Aid-funded Economic Development program.
Zambia	0.800	Drinking water supply and sanitation, as part of the Health program.
USAID/Southern Africa	0.100	Drinking water supply, as part of the Okavango River Basin Management program.
USAID/West Africa	1.500	Support to the West Africa Water Initiative (WAWI), a public-private partnership to provide potable water and sanitation to rural villages in Ghana, Mali and Niger. Leverages about $4.5 million per year.
Africa Regional	4.000	Two public-private partnerships: • The "Global Watersheds Partnership Program" with The Coca Cola Company, including increasing access to safe water supply, promoting sanitation and hygiene, and protecting and conserving local water resources. • A new partnership under development to provide water and sanitation to schools, health clinics, and communities throughout Sub-Saharan Africa using innovative technology and an innovative business model.
Bureau of Democracy, Conflict and Humanitarian Assistance (DCHA)	35.201	Drinking water supply and sanitation as part of emergency humanitarian assistance in Africa.
TOTAL	**54.706**	

Examples of USAID Water and Sanitation Programs in Africa

Following are three examples of USAID-supported water and sanitation programs in Africa:

West Africa Water Initiative

The "West Africa Water Initiative" (WAWI) was launched in 2002 to maximize the impact of water-related investments by both private and public actors, targeting interventions to highly vulnerable rural and peri-urban populations in West Africa. Inspired by the vision of the Conrad N. Hilton Foundation, this public-private partnership grew from years of experience with World Vision and other international non-governmental partners. In its initial phase, WAWI invested in small-scale potable water supply and sanitation activities in Ghana, Mali, and Niger, as the entry point for an integrated approach to water resources management. Collaboration with other organizations creates programmatic synergy and accesses the complementary strengths and funding potential of a number of affiliated partners. The initial budget from all partners is more than $45 million for six years, including $6 million from USAID.

The impact of this initiative will be significant, and result in increased access to services, improved health and welfare, and more sustainable management of water resources for hundreds of thousands of people. WAWI hopes to foster a new and potentially replicable model of partnership and institutional synergy that ensures technical excellence, programmatic innovation, and long-term financial, social and environmental sustainability in water resources management.

Community-Watersheds Partnership Program with The Coca-Cola Company

The Coca-Cola Company (TCCC) formed a global partnership with the U.S. Agency for International Development and non-governmental organization the Global Environment and Technology Foundation (GETF) in 2005 to address specific local water resources and development needs. In addition to producing tangible results for target communities, the partnership will also advance Coca-Cola's business objectives in corporate responsibility, water stewardship, and local community support. The Community-Watersheds Partnership Program was born to support collaborative water sector interventions in developing countries around the world. The budget to date of this program is $6.5 million, including $3 million from USAID and $3.5 million from Coca-Cola. One of the first two projects supported by the Community-Watersheds Partnership Program is located in Mali, and the program will expand to several other African countries in 2006-2007.

In the Mali project, Coca-Cola faces water resources opportunities and challenges. Through the partnership, TCCC and USAID co-invested in support for community interventions in water supply, sanitation, and hygiene to increase access to clean water for residents in the immediate communities. USAID's local non-governmental organization (NGO) partners are developing and rehabilitating water points and promoting sanitation and hygiene in peri-urban Bamako (near the local bottling plant), as well as rural communities in the Ségou, Mopti and Timbuktu regions. In addition, the local TCCC bottler is upgrading their wastewater treatment plant in 2006, and is exploring opportunities with NGO partners to use treated wastewater for small-scale irrigation,

and potential application of waste biosolids as a soil conditioner, with the goal of increasing food security and generating revenues for local families.

Millennium Water Alliance Water and Sanitation Program in Ethiopia

The Millennium Water Alliance (MWA) is a cooperating group of U.S. humanitarian and faith-based agencies working to assist poor communities in the developing world to gain access to safe water and sanitation. Begun in 2004 with $1.8 million in support from USAID and the State Department, $800,000 in grant funds from MWA partner organizations, and in-kind resources of local partners, the MWA implemented a community-based water and sanitation program to clean water, sanitation facilities and hygiene training in four locations in Ethiopia. Activities include capping water sources; digging wells and drilling boreholes; building reservoirs, roof rainwater harvesting schemes and latrines; hygiene training; and training in water system construction and maintenance. As of August 2005, the program had provided improved water and sanitation facilities to over 70,000 rural Ethiopians.

3. Leveraging Available Resources

The scale of the water and sanitation problem in Africa is so great that it can only be met through the combined efforts of all actors. Funding will be needed from international donor agencies, multilateral development banks, private philanthropic organizations, private investors, and African governments. As of 2002 in sub-Saharan Africa, 288 million people, or 42 percent of the population, lacked access to clean drinking water and 437 million people, or 64 percent of the population, lacked access to improved sanitation. One recent estimate places the total annual expenditure requirement to meet the Millennium Development Goals for water and sanitation in Africa at $6.7 billion. (http://www.wsp.org/publications/af_washsynthesis.pdf.)

USAID will seek to achieve the greatest impact in its water and sanitation activities in Africa. USAID will seek to mobilize significant funding from other available sources, and coordinate with and increase the impact of activities supported by other organizations, such as multilateral development banks and bilateral donors.

4. Priority Focus for Water and Sanitation in Africa

While the need for improved access to clean water and sanitation facilities is felt in every country of Africa, USAID will focus strategically in regions, countries and communities where we can achieve the greatest results. While difficult choices will be needed, it is important to promote collaboration among donors to ensure wide coverage.

The principle of responding to the greatest need has been the determining factor in the geographic selection of most of USAID's water and sanitation activities in Africa. As noted above, the bulk of these activities have been implemented as part of humanitarian assistance programs. For example, in the past four years, USAID's International Disaster Assistance funding for water and sanitation activities in Africa has focused on Sudan, Ethiopia, Sierra Leone

and Somalia. Similarly, in FY 2006, the USAID Bureau for Africa will target the bulk of its new development-focused water and sanitation funding on the chronically drought-stricken areas of Kenya and Somalia, to increase the resilience of populations in those areas to drought in the future.

USAID will apply additional criteria to set priorities for its future water-related activities in regional and country level planning within Africa. As specified in the Water for the Poor Act, these priority setting criteria address both the water and sanitation needs of the countries in which we work and the likely effectiveness of our interventions to achieve results. While many of these criteria are already being informally applied throughout Agency decision-making, a more systematic consideration of these factors could help enhance the strategic impact of work done in the water sector over the next ten-year period.

Geographic Prioritization Criteria:

- Level of Need in Water Supply and Sanitation Coverage: This is defined as the percentage of population without access to improved drinking water supply and improved sanitation facilities, as defined by the WHO-UNICEF Joint Monitoring Program.
- Country Enabling Environment to Support Sustainable Impact: The likelihood of successful interventions in the water sector can be partially assessed by considering the legal, policy and institutional context for water resources management or water supply and sanitation delivery in a given country. USAID investments will have the greatest impact in countries where a government is committed to providing water and sanitation in a cost effective manner.
- USAID Historic and Existing Investments in the Water Sector: Across its development portfolio, USAID is interested in consolidating the gains it has made in various countries in different development sectors, and building on the successes it has already achieved. In most cases complementing existing programming (including adding new water subsectors of intervention to strengthen what is already in place) may be the most strategic approach.
- Opportunities to Integrate Water Investments with USAID Overall Country Portfolio: Integration of water and sanitation activities into a given Mission's core strategic framework helps ensure that water investments contribute to other priority development areas, and promotes greater programmatic sustainability as well as impact on the ground. For example, introducing a water supply, sanitation and hygiene component into a large, ongoing regional or national health or education program is more likely to have far-reaching impacts and to be a sustainable intervention than a stand-alone and localized activity with no connection to other USAID programs.
- USAID Comparative Advantage: We will take into account USAID's capacity to work in key countries, and evaluate how the water sector fits into that analysis. In some countries USAID will have a clear area of unique expertise in the water sector In addition, the plans of national governments, other donors, and/or the private sector need to be fully considered to determine if there is a logical and strategic water-related niche for USAID to fill.
- Other Significant Leveraging Opportunities to Build on Other Donors/Partners with Parallel and Complementary Activities: USAID will strategically evaluate the developing partnerships with other donors and international financial institutions (e.g. the World Bank

and the African Development Bank) to increase financial investments in water programs. We will seek to leverage a much more significant investment by these actors, e.g., a multilateral development bank, another bilateral or private donor, the national government of the target country, or a private sector financier.

- Partnership Opportunities with Significant Matching Funds: Priority will be given to those locations where there is an opportunity to leverage other resources through other alliances with non-traditional partners, such as those promoted under the Agency's Global Development Alliance model. Alliances are often geographically-specific, and can present excellent opportunities in specific countries to stretch the effectiveness of limited USAID resources in the water sector.

Considerations for applying these criteria:

- While the objective conditions related to water supply and sanitation and water resources management facing the countries in which we work are clearly important and taken into account in these criteria, they only represent one part of the story. An important consideration for determining effectiveness and strategic impact of U.S. government investment pertain to the internal characteristics of USAID and the overall U.S. government context. Absolute "need" in a country will be a secondary consideration, given that the great level of need in most places where USAID works far exceeds any realistic budget levels for our activities, and wherever we work the highest need populations are targeted. Of more relevance is where we can make the highest impact on that need through our investment choices.
- Further, in the area of water supply and sanitation in particular, the prioritization criteria listed must be differentially applied to urban and rural situations. Extensive past experience suggests that virtually all the potential "need" and "success" factors will differ quite markedly in a single country depending on whether the focus is urban or rural, and combining the two obscures these important differences, and can unbalance strategic decision-making about investments in each area.
- The criteria outlined are not necessarily all weighted equally. If a particular country has both great need and great potential for impact in the water sector, if other U.S. foreign policy and development interests are overwhelmingly higher in that place (e.g., HIV/AIDS), water sector activities will not always be the optimum strategic option.
- While it is tempting to develop a numerical index to assign a single 'score' to each country for ranking priorities, it should be recognized that water resources management issues, as well as deficits in water supply and sanitation, are extremely local in nature, and this diversity may not be captured in national level figures. Any ranking of quantitative factors needs to be balanced with qualitative input and common sense analysis that drills down to a higher geographic resolution.
- These criteria primarily address where USAID should be engaged in the water sector. If a decision is made to go forward in a given country, they also provide some guidance on what activities should be the focus of the intervention (e.g., to take advantage of leveraging opportunities, or an area of particular comparative technical expertise in that country). Additional guidelines and information must also be brought to bear in defining the specific content of activities, however, and several of these points are also outlined below.

- USAID will analyze trends and needs in water resource needs on a more regular basis and more frequently than once in a ten-year period. The framework and criteria will be flexible enough to permit a rapid response to new opportunities for strategic leveraging or to address changing foreign policy priorities that cannot be anticipated. These criteria are meant to inform strategic decision-making on water-related investments, but not dictate it.

5. What USAID Should Do in Water and Sanitation in Africa

The choice of what to do – the nature of the specific water and sanitation intervention in any given country – is affected by many of the same factors mentioned above as criteria for choosing where to work. For example, a partnership opportunity might lead the Agency to undertake activities that utilize the particular capacities and methodology of the partner organizations. Similarly, USAID's comparative advantage in a given technical area, e.g. innovative financing, may recommend that technical approach over another.

In addition, the imperative to make the most of available resources indicates that interventions should be selected for their impact on the largest number of people over the largest timeframe, and this may lead USAID to place greater emphasize on some types of water and sanitation interventions over others. For example, given a choice between drilling wells in one community and working with the host government to influence national water policy, the former is easier to immediately appreciate but the latter may have broader impact.

Role of Water and Sanitation in USAID Sectoral Programs

Activities to increase access to improved water and sanitation facilities have a role in many types of USAID programs. Following is a discussion of the "entry points" for water and sanitation activities in the major sectoral programs managed by USAID.

- Health

This is the most common entry point, because of the positive impact of water, sanitation and hygiene activities (WASH) on child survival and other vulnerable populations, including People Living With HIV/AIDS (PLWHA). The primary focus in this sector has been on promoting three key behaviors proven to reduce diarrheal disease. These include proper hand washing at critical times, safe disposal of feces, and safe water handling, including point of use water treatment. Subsidizing household latrines has been shown to be unsustainable, but the health sector can promote good sanitation behaviors, stimulating interest in and demand for household and community sanitation solutions. In addition to stand-alone programs, promotion of these three key behaviors should be integrated into other health programs, including HIV/AIDS, family planning, pre- and post-natal clinics, nutrition programs, and training of local health staff.

The USAID Health sector should implement country-specific hygiene improvement initiatives that include multiple, coordinated interventions, such as involvement of all stakeholders, behavior change strategies to enhance the desirability of improved hygiene practices, increased access to the products that facilitate the desired behaviors, and advocacy for improved policies that support hygiene behavior change. A number of behavioral and social change methods are

available, including social marketing, community social mobilization, interpersonal communication, and negotiation of safer alternative hygiene practices.

The Health sector should take leadership in partnering with other sectors and institutions for the financing and provision of the necessary hardware for water supply and sanitation facilities, for setting WASH within the larger water resources context, and for policy and legislative reforms to support the hardware and hygiene promotion efforts.

- Education

There are two entry points for promoting WASH in the Education sector: hygiene education and access to clean water and adequate sanitation facilities. School curricula should include a WASH module, but also integrate the WASH messages into other subject areas like environment, biology, history, and math. USAID should promote and/or partner with other agencies like UNICEF to provide WASH facilities at schools can reduce exposure to contaminated water, reinforce health and hygiene messages in the curricula, and act as an example to both students and the wider community. Adequate sanitation is linked to increased school attendance, especially for girls.

- Democracy and Governance

Water and sanitation programs can be impacted by weak democracy and governance, and building strong community involvement in water and sanitation services delivery can strengthen the links between citizens and the local officials who are accountable for these services. Efficient, effective and regular delivery of services improves quality of life, increases productivity, builds confidence in democracy, and increases government effectiveness and legitimacy – all important objectives in USAID's Strategy for Africa. Governance is the cross-cutting theme that links and reinforces these sectors by ensuring that governments have the capacity to effectively deliver, regulate, and oversee services. Women can have more opportunities for involvement in governance through WASH issues. Democracy and Governance sector programs should look for opportunities to organize and build capacity of communities around WASH service delivery.

- Economic Growth

Water is a driver of a new path of development in which economic growth is linked to social equity and environmental responsibility. Investment in WASH can reduce both the time and cost of treating waterborne disease, a burden that falls heavier on women and girls who spend hours collecting water from distant sources and caring for sick family members.

Partnerships with the commercial private sector can provide good opportunities for WASH hardware and hygiene promotion. A good example is hand washing, where private sector interests can promote their own soap products with health messages in parallel with public-sector generic messages. Other Economic Growth entry points include supporting development, manufacture, distribution, maintenance, and sales of WASH related hardware, including pipes, pumps, latrine slabs, and safe water storage and treatment products. Funds could be used to guarantee financing mechanisms such as revolving funds and pooled-financings to mobilize domestic savings and municipal funds for investments in water and sanitation. These can serve

as a catalyst for greater investment in water and sanitation projects by villages, small towns, and municipalities.

- Environment

Water supply and sanitation are closely linked to broader issues of water resources management. Poor sanitation and feces disposal can lead to contamination of water resources. Integrated water resources management (IWRM) can be used as a framework to provide water for multiple uses in an ecologically sound and sustainable manner. It takes into account social, economic, environmental and technical dimensions in the development and management of water resources.

One entry point is the development of partnerships linking those focused on the delivery of community-scale water supply and sanitation hardware with those working to improve water resources planning, water supply governance, and community capacity. State-of-the-art thinking on ensuring safe water quality relies on examining hazards to water quality at critical points ranging from catchment to consumer. This can involve interventions at the level of watershed (e.g. protection activities, including sanitation), water production (or access to water) (e.g. treatment plant, well), distribution system (e.g. pipes, containers), and household (e.g. storage containers, POU treatment). This ensures the protection of domestic water supplies and the sustainability of improved water supply and sanitation investments. Another possible entry points is to organize community groups or farmer associations to develop low-cost, low-technology water harvesting techniques such as seasonal dams and water catchments.

- Food Aid and Emergency Humanitarian Assistance

Water and sanitation are priorities when dealing with both natural disasters and complex emergencies. People affected by disasters are more likely to become ill and to die from diseases related to inadequate sanitation and water supplies than from any other single cause. A frequent avoidable problem is the contamination of clean ground water at the point of use due to improper transport and storage. The USAID Bureau for Democracy, Conflict and Humanitarian Assistance/Office of Foreign Disaster Assistance (DCHA/OFDA) responds rapidly with non-food items in the immediate aftermath of a disaster and aims to lay the foundation for long-term development during its response to long-term protracted disasters. The USAID Office of Food for Peace (FFP) implements the use of food aid as direct distribution during a disaster response and as Food For Work (FFW) for development programs. Potable water and adequate sanitation are included in the definition of food insecurity, and along with hygiene promotion these are specifically targeted to improve health and nutrition by FFP. Entry points include joint programming of funds such as 1) DCHA/OFDA takes the lead in constructing the water supply and sanitation systems, and USAID's Regional and other Pillar Bureaus provide the hygiene promotion, policy and training components, 2) simultaneously EGAT or Regional Bureaus could use Development Assistance-supported technical assistance to work with communities to build sound WASH systems to be maintained using DCHA/FFP development program resources such as FFW. Additional entry points include the participation of WASH experts in Disaster Area Response Teams.

General Principles of Operation

All USAID development programming must follow the nine core guiding principles of the Agency as a whole (see box below). These principles guide overall U.S. development and reconstruction assistance, and are fundamental to the success of aid as an instrument of U.S. foreign policy and national security.

USAID Guiding Principles

1. **Ownership:** Build on the leadership, participation, and commitment of a country and its people.
2. **Capacity Building:** Strengthen local institutions, transfer technical skills, and promote appropriate policies.
3. **Sustainability:** Design programs to ensure their impact endures.
4. **Selectivity:** Allocate resources based on need, local commitment, and U.S. foreign policy interests.
5. **Assessment:** Conduct careful research, adapt best practices, and design for local conditions.
6. **Results:** Focus resources to achieve clearly defined, measurable, strategically focused objectives.
7. **Partnership:** Collaborate closely with governments, communities, donors, NGOs, international organizations, universities, and the private sector.
8. **Flexibility:** Adjust to changing conditions, take advantage of opportunities, and maximize efficiency.

More specifically in the water sector, USAID strongly supports internationally endorsed principles of sound and sustainable water resources management as well as water supply, sanitation, and hygiene programming for human health outcomes. Some of these include:

Integrated Water Resources Management (IWRM) Principles: In recent years, water management institutions around the world have embraced the fundamentally interconnected nature of hydrological resources by promoting integrated water resources management as an alternative to the dominant sector-by-sector, top-down management style of the past. The IWRM concept has been defined by Global Water Partnership as 'a process that promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital eco-systems.'

Integrated Water Resources Management Principles

- A **landscape-scale perspective** at the basin or watershed scale spanning from 'ridge-to-reef', addressing surface and groundwater, land and water, freshwater and coastal interactions, and water quality and quantity to ensure sustainability of ecosystem processes and freshwater use for human applications alike;
- An **intersectoral approach** to decision-making, considering the domestic, agricultural, industrial, and ecosystem uses of water and coastal resources, and balancing economic and social needs of people with ecological values and sustainability;
- An emphasis on **governance** at all scales including participatory and equitable decision-making and resource management; full involvement of women and other marginalized populations in decision-making; management delegation to the lowest appropriate level (subsidiarity principle); utility reform and corporate governance strengthening; improved policy, regulatory, and institutional frameworks; transparent and sustainable financing options; and a full partnership between public and private sector actors;
- The application of **sound science** and information management for decision-making, including hydrological, biophysical, economic, social, and environmental characteristics of a basin and its inhabitants;
- The recognition of the key role of **capacity building** as a pillar of sustainability in areas including general awareness about water, policy making and governance approaches, regulations and compliance, and infrastructure and utility design, financial management, and O&M;
- An acknowledgement that water has an **economic value** in all its competing uses and should be considered an economic good, including full-cost pricing complemented by targeted subsidies, more complete valuation of environmental services of water and watershed resources, and promotion of reliable and sustained financing mechanisms; and
- The adoption of the **best and most appropriate technical practices** in all subsectors including water source management (supply optimization, demand management/water efficiency, and pollution prevention), sustainable aquaculture and fisheries management, efficient irrigation systems and increased water productivity, sustainable water/sanitation/hygiene service delivery, and freshwater flows for ecosystem health and environmental services.

- **The Hygiene Improvement Framework:** USAID has developed a comprehensive approach for preventing diarrhea by identifying the three major determinants of hygiene improvement and a number of potential strategies for program action within each category.

Hygiene Improvement Framework

- **Access to Hardware** – enhancing access to water/sanitation infrastructure and household technologies such as household chlorination systems and soap;
- **Hygiene Promotion** – promoting hygiene behaviors such as handwashing, safe water storage, and appropriate excreta disposal; and
- **Enabling Environment** – strengthening an enabling environment that facilitates or enhances key technologies and behaviors. This may be accomplished through advocacy, training, institutional strengthening and other appropriate support mechanisms.

- **Water Safety Plan Guidelines:** The most effective means of consistently ensuring the safety of a drinking-water supply is through the use of a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer. WHO and other international organizations, strongly endorsed and promoted by the U.S. Environmental Protection Agency, have developed guidelines for three essential actions that are the responsibility of the drinking-water supplier in order to ensure that drinking-water is safe.[56]

Water Safety Plan Guidelines

- **system assessment** to determine whether the drinking-water supply chain (up to the point of consumption) as a whole can deliver water of a quality that meets health-based targets. This also includes the assessment of design criteria of new systems;
- identifying control measures in a drinking-water system that will collectively control identified risks and ensure that the health-based targets are met. For each control measure identified, an appropriate means of **operational monitoring** should be defined that will ensure that any deviation from required performance is rapidly detected in a timely manner; and
- **management plans** describing actions to be taken during normal operation or incident conditions and documenting the system assessment (including upgrade and improvement), monitoring and communication plans and supporting programs.

- **Millennium Development Goal Water Supply and Sanitation Target Principles:** The WHO/UNICEF Joint Monitoring Program has also set out a set of action recommendations that reflect many principles for achieving internationally endorsed goals specifically focused on water supply and sanitation coverage.[57]

MDG Target Principles

- Making political commitments
- Strengthening legislation and regulations
- Building capacity to make a difference
- Getting sanitation and hygiene right
- Mobilizing financial resources
- Paying attention to gender and equity
- Supporting small-scale entrepreneurs
- Focusing on youth and using education
- Taking responsibility for the environment
- Monitoring progress
- Making information flow

It is clear that there is great consistency and considerable overlap among all these sets of guiding principles, and with the guidance outlined thus far in this document.

Areas of USAID Technical Comparative Advantage in the Water Sector

USAID has developed several areas of particular expertise within the water sector that are consistent with the above-mentioned international principles guiding the water sector, and are making real contributions to advancing the state-of-the-art around the world. Work in each of

[56] WHO. Water Safety Plans: Managing Drinking Water from Catchment to Consumer. Geneva. 2005.
[57] WHO and UNICEF. Joint Monitoring Program. Water for Life: Making it Happen. Geneva. 2005.

these areas should be expanded and deepened to consolidate and scale up progress made to date, and make further advances. As future USAID programming occurs in the water sector over the next ten years, Africa Bureau Missions will be encouraged to give special consideration to each.[58]

Additional details regarding each area follow:

- **Innovative Financing for Water Supply, Sanitation, and Wastewater Treatment Infrastructure:** USAID is pioneering several models of innovative financing for water-related infrastructure in developing countries including India, the Philippines, Indonesia, and South Africa. The Agency is engaged in the world market for private debt financing, working closely with overseas missions in an effort to identify bankable projects and risk-sharing partners in the water sector. USAID's Development Credit Authority (DCA) is one proven and effective tool that permits USAID to issue partial loan guarantees to private lenders to achieve economic development objectives. DCA partial guarantees help mobilize local capital and put it to work in creditworthy but underserved markets. The Agency also promotes other models such as "pooled" financing that allows municipalities to group infrastructure projects together and use government grants, credit enhancements or future revenues as collateral to tap local private capital. The U.S. Clean Water State Revolving Fund (SRF) model was also created as a sustainable financing mechanism to pay for infrastructure projects by leveraging public funds to raise private capital in U.S. capital markets. By providing low-cost financing for water and sanitation projects, small and mid-sized municipalities can access domestic capital from the local financial market rather than rely on public funds and subsidies. The model is now recognized as a leading vehicle for international donor agencies and nations to consider for replication.
- **Water and Sanitation Utility Reform:** Water and sewerage utilities in developing countries are often operating far below a sustainable cost recovery level. Bankrupt utilities struggle to maintain current inadequate levels of service, and lack capital to even begin to expand to the underserved poor populations in slums, peri-urban areas, and villages. Addressing problems of financial sustainability, weak management, often requires fundamental reforms in how these utilities are run, how they are regulated, and in the pricing and tariffs charged by these service providers. In addition to problems of weak utility management and inefficient operations, many experts have cited poor corporate governance as a root cause of the financial sustainability difficulties facing water and sewer utilities in developing countries. Water utility reform is often a prerequisite to coverage of the poor with water and wastewater services in towns and cities, because poorly governed utilities with inadequate tariffs tend to be deeply financially troubled, and cannot expand or sustain services in poor communities.

[58] Note that there is considerable overlap among these comparative areas of technical expertise of USAID and the five key areas of action recommended by the WHO-UNICEF JMP in 2005 to meet the MDGs in water supply and sanitation, i.e.:

- Meeting basic sanitation demand
- Significantly increasing access to safe drinking water
- Focusing on changing key hygiene behaviors
- Promoting Household water treatment and safe storage and
- Ensuring more health for the money (including cost effectiveness analysis for different situations)

This combination of utility governance, regulatory and management improvement is an effective approach to building water and sewerage utility sustainability. USAID has also found that combining water utility reform with sustainable capital market financing is a powerful combination. A range of techniques and project models have shown dramatic success in increasing coverage for the poor while still improving the financial sustainability of urban and town water utilities.

- **Household Safe Drinking Water:** USAID has been actively involved with other international partners in promoting a variety of approaches to improve safe storage, transport and household treatment of drinking water supplies, for example as a founding member of the International Network to Promote Household Water Treatment and Safe Storage. USAID works closely with the Centers for Disease Control and Prevention (CDC) in implementing and scaling-up use of CDC's Safe Water System for household-level chlorination of drinking water. The Agency has supported The Safe Drinking Water Alliance, a public-private collaboration to develop innovative program approaches for ensuring the safety of household drinking water. USAID, Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs, CARE, PSI, and Procter & Gamble joined forces to leverage their respective expertise and resources to better understand the behaviors and motivations for choosing particular technologies for treating household water, sharing the knowledge gained, and identifying opportunities for scaling up successful efforts. Recently, USAID has also made available a program for use by field Missions to promote both household water treatment and the use of zinc for diarrhea treatment, building on existing USAID-supported social marketing activities at country level, as well as a public-private partnership model that engages the public sector and manufacturers, NGOs, and civil society. The Agency also provides technical assistance to develop commercial partnerships for product development, marketing, and distribution.
- **Hygiene and Sanitation Promotion:** USAID has made investments for over thirty years in water, sanitation and hygiene to improve human health. Current areas of hygiene emphasis focus on improvements at large scale for three key hygiene practices: safe feces disposal, proper hand washing with soap, and point-of-use water treatment and safe storage. Each of these interventions typically results in a 30-40% reduction in diarrheal prevalence in children under five. USAID's approach is to strengthen partnerships, coordinate efforts between the various actors involved in health and hygiene, integrate hygiene into health and non-health platforms, and engage the private and commercial sectors to ensure products and services are available. The Agency provides technical assistance to develop, implement and evaluate program interventions that motivate and facilitate improved hygiene practices.
- **IWRM Models:** The USG has been an active supporter of integrated approaches to water resources management around the world, at a transboundary, national and subnational basin scale. Almost 40 percent of the world's population lives in more than 200 river basins that are shared by more than two countries. Cooperative management of shared watercourses can optimize regional benefits, mitigate water-related disasters, and minimize tensions. It can also help maintain shared ecosystems and improve water productivity in agriculture. The USG is actively participating in a wide range of transboundary related activities targeted at improving water resources management in a manner consistent with the principles of IWRM. Major activities are underway in the Amu Darya/Syr Darya (Central Asia), Kura (Caucasus), Okavango (Southern Africa), Pastaza/Western Amazon (Peru/Ecuador), and Mara (Kenya

Tanzania) Basins. The United States is also supporting the *UNDP Transboundary River Basin Initiative* promoting and strengthening regional institutions, legal structures, and development strategies to ensure the equitable utilization and benefit of basin resources. Activities are engaging a wide range of partners in the Nile, Niger, Senegal, Mekong, and Rio Frio river basins. At a national scale, DOS and USAID are supporting the development of national IWRM plans in Ethiopia, El Salvador and Indonesia through the Global Water Partnership, to help meet the WSSD target for IWRM national planning set forth in Johannesburg.

- **Emergency Response and Humanitarian Relief:** The U.S. is a global leader in providing humanitarian assistance and food aid in times of crisis and disaster around the world. This includes a significant amount of USAID investment (over $104 million in 2005 alone) for water supply, sanitation, and hygiene related investments associated with these types of events. This is coupled with an enormous amount of technical assistance or logistical support from other federal agencies as well as the U.S. military in emergency settings. Responses to events including the recent South Asia tsunami, Pakistan earthquake, or Sudanese conflict have saved countless lives through timely and effective response to water and sanitation needs. Activities in water supply and sanitation are generally part of a more comprehensive package of assistance to assist with immediate emergencies and to help mitigate food insecurity and vulnerability to future shocks.
- **Applied Science and Technology:** U.S. federal agencies are global leaders in many areas of biological, physical or social science and technology expertise related to water that is of great applicability around the world. Areas such as pollution prevention, satellite remote sensing, global information systems, modeling and simulation, and high-performance computing are all niches where U.S. water-related science and technology leads the world. What the United States does internationally to address water issues can also pay significant experiential dividends as we grapple with similar issues domestically, e.g., uneven water resource distribution, unsustainable mining of groundwater, deteriorated water quality, strong growth in semiarid regions, increasing losses from floods and droughts, the impacts of climate variability, and dependence on shared international water resources.
- **Public-Private Alliances:** The Global Development Alliance (GDA) model reflects USAID's commitment to change the way it implements its assistance mandate. USAID is working to mobilize the ideas, efforts and resources of governments, businesses and civil society by forging public-private alliances to stimulate economic growth, develop businesses and workforces, address health and environmental issues, and expand access to education and technology. Alliances incorporate a diverse array of USAID and partner resources to arrive at solutions only available through pooled efforts. Since 2001, USAID has supported more than 400 public-private alliances with approximately $1.4 billion, leveraging almost $4.6 billion in outside contributions. The Agency strives to enter into partnerships that bring at least one-to-one leveraging of USAID resources with additional non-federal resources, which can be in-kind or cash. USAID is a member of many innovative alliances in the water sector around the world, several of which are highlighted in Section 6 below.

Annex D: Example Strategy – ECO Asia

1. AN ECO ASIA STRATEGY FOR IMPROVING BANKABILITY AND FINANCING OF WATER AND SANITATION SERVICES IN ASIA

This document describes the strategy for improving access to financing for water and sanitation services[59] in Asia. The strategy deliberately combines innovative financing with the effort to make utilities "bankable." Experience clearly shows that working on financing without complementary efforts to enhance the credit capacity of utilities does not work. Banks want to lend to bankable utilities; and only bankable utilities are capable of meeting their obligations under loan and bond agreements.

2. STRATEGIC FOCUS AREAS FOR THE ECO ASIA PROJECT

The Eco Asia project has five Strategic Focus Areas related to financing and creditworthy water and sanitation services. Each Strategic Focus Area addresses a basic constraint to the development of sustainable water and sanitation services in Asia. These are regional challenges in Asia. Here, regional problem refers to the fact that multiple Asian countries face similar constraints. The Eco Asia Strategic Focus Areas are:

A. **Effective models for serving the poor**. The poor are often excluded from services from public water systems. The reasons the poor are underserved include inadequate prices for services to poor consumers, weak governance of the utility, and inappropriate service models, such as house connections in areas were community standpipes and wholesale services are more appropriate. This Focus Area will identify business and technical models that expand services to poor consumers on a sustainable basis.

B. **A sustainable business case for sanitation services**. Sanitation services in the region are generally under-funded and lack business models for sustained service. There are some cases where donors or governments have built wastewater collection and treatment systems that are not maintained. In other cases, financial constraints make it impossible to expand sanitation services. It is now well known that throughout much of the region, the system of user charges – price, method of billing and collection, and powers to enforce user charges – is not adequate for long term growth of sanitation services. Unless an adequate business case is developed for sanitation services, facilities will not expand to meet the region's needs.[60]

[59] Throughout this strategy, we refer to water and sanitation utilities as either "utilities" or more generally as "service providers." Depending on the country, these may be departments of a national or local government, public authorities, public corporations, or private operators.

[60] The USAID Environmental Health Project (EHP), for example, identified the business problems of sanitation as underlying reason that sanitation services are not expanding in LAC region. The EHP report "Improving Sanitation in Small Towns in Latin America and the Caribbean" states: "The root causes of inadequate sanitation are insufficient recurrent revenues and poor management, not inappropriate technologies… Trying to solve the problems (of sanitation) by introducing "new" and "more appropriate" technologies more often does not address the main constraint." Page 25.

C. **Innovative governance of water and sanitation utilities**. A key constraint to expanding water and sanitation services is the weak governance of water and sanitation utilities. For example, the ADB's recent report titled "Asian Water Supplies: Reaching the Urban Poor"[61] explains that weak governance of water utilities is the single most important reason that the poor are underserved. The World Bank's recent Characteristics of Good Performing Water Utilities provided detailed evidence showing that the excellent performance of some utilities is due to their good governance arrangements.[62] This Strategic Focus Area will support introduction and exchange of innovative governance methods that are associated with good performing water and sanitation utilities. The emphasis is on corporate governance models that are considered "best practice" in developing country water and sanitation utilities. These include corporatization, performance contracts, staff incentive programs, benchmarking and other approaches.

D. **Regulation, price setting and cost recovery**. Cost recovery is a major challenge for water and sanitation utilities throughout the Asia region. There is a pressing need to improve the ability of utilities throughout the region to cover their costs. A key objective of the Eco Asia project is to help Asian partners develop, test and share effective methods of setting water and sanitation prices so that they are reasonably cost reflective.[63] This involves setting up effective regulators and introducing good regulatory methods.

E. **Financing mechanisms for water and sanitation services**. The objective of this Strategic Focus Area is to support and disseminate innovative financing mechanisms for water and sanitation capital investment. Water and sanitation utilities that are in transition from financially troubled to bankable require specialized types of financing. In addition, specialized financing mechanisms enable utilities to borrow from local capital markets.

These Strategic Focus Areas are the basis for focusing, organizing, and evaluating project results related to innovative financing and transition to creditworthiness in water and sanitation utilities. It is important to note that these Strategic Focus areas are consistent with the Eco Asia project's stated objective of helping Asian partners achieve full cost recovery. The Focus Areas are building blocks on which cost recovery and sustainability is established.

[61] Arthur McIntosh, 2003, Asian Development Bank & International Water Association Publishing.

[62] Governance refers to two things: civil governance, and corporate governance. Civil governance is related to the institutions and processes of local, regional and national governmental bodies, and civil society involvement with these bodies. Corporate governance refers to the institutions and processes that govern management of a water or sanitation utility. These are often easily identifiable as the corporate form, supervisory structures, primary and secondary legislation directly related to the utility, by laws, and incentives for good performance.

[63] "Reasonably cost reflective" here is a practical cost recovery concept that indicates that the utility has enough cash to pay its recurring cash costs. This is basically the same as a "revenue requirements" approach that is commonly used by regulators. This is contrasted with "full cost recovery" which means that the utility recovers its entire economic cost, including depreciation, debt service, and pension obligations.

3. SPECIFIC FINANCING ISSUES

There are four areas in which the Eco Asia project can help mobilize financing for water and sanitation utilities:

- **First and foremost, help with the transition to "bankable"[64] utilities**. The majority of Asia's water and sanitation utilities are not creditworthy. In fact, almost all utilities operate without full cost recovery, and most do not even recover O&M costs. Unless utilities become creditworthy, the opportunity for financing through private credit markets is limited. Establishing financing facilities that specialize in lending to water and sanitation utilities will not accomplish much unless the number of creditworthy utilities grows dramatically. Four of five Eco Asia Strategic Focus Areas help utilities become bankable. For example, they help utilities expand services to the poor without adding to the financial losses of the utility. If financing of water and sanitation is to expand, it is essential to concentrate resources on helping utilities transition to bankability, and at the same time, establish innovative, sustainable financing mechanisms. Supporting transition to bankability is not a financing task per se; it is strategic activity that makes innovative financing work.
- **Second, there is a need for well managed, sustainable, specialized financing institutions and mechanisms, such as revolving funds, bond pools, and special water/sanitation loan windows in financial institutions**. Specialized financing mechanisms allow three important financing objectives to be accomplished: (1) specialized lending products tailored to the needs of utilities in transition can be provided. (2) bond pools, leveraged revolving funds, and special lending windows enable utilities to indirectly access private credit markets. This is particularly important for utilities that are in secondary and tertiary cities. (3) market oriented subsidies can be channeled to utilities by combining public grants and private loans. In OECD countries, revolving funds are considered a highly efficient mechanism for channeling public subsidies into water and wastewater services that would otherwise not be financially viable.[65] The Eco Asia project will help transfer effective models specifically tailored to the needs of utilities in the region. [66]

[64] The term "bankability" here means that the utility is capable of servicing a term loan. It also implies that the utility has sufficient cash revenues to pay its cash operating costs, including any debt service obligations. It is essentially equivalent to the "creditworthiness" of the utility, although "creditworthy" also refers specifically to the credit criteria of a rating agency or bank in many cases.

[65] The transfer of public subsidies for water, and particularly wastewater, facilities is a common practice in developed countries. This practice reflects the fact that clean water and good sanitation are considered to have extensive public goods associated with universal access to these services. In many situations, the utility cannot pass all costs to direct users of services. In these situations, governments, including the U.S. and other developed countries, adopt a policy of transferring public funds into the services. Generally, the subsidies are capital subsidies, not operating subsidies. Revolving funds make this policy of subsidizing a portion of the cost of water and sanitation services more predictable, efficient and enable leveraging through the capital market.

[66] It is important to note that Eco Asia's role in actual design and implementation of bond pools and revolving funds may be limited by the fact that several bilateral USAID missions already have ongoing bilateral technical assistance projects that are working specifically on this. For example, USAIDs in India, Indonesia, and Philippines have

- **Third, there is an urgent need for suitable loan products[67] for water and sanitation utilities that are in transition tobankability**. Utilities that have just reached operating "breakeven" cannot immediately take on large term loans for major capital development projects, like expansion of connections for the poor or construction of new water treatment plants. Utilities that are in transition need specialized credit products that support their transition to bankabilty. The types of investments that help with this transition would generally include the following:

  i. Customer enumeration
  ii. Programs to convert illegal customers to legal customers
  iii. Billing and collection systems
  iv. Metering of larger consumers
  v. Leak detection and repair equipment
  vi. Replacement of pumps and valves
  vii. Limited sectorization to increase the reliability and efficiency of an existing network
  viii. Establishment of customer service programs

  Lenders need to develop loan products that are specifically designed for utilities in transition, including the types of investment that are allowed under the loans, grace periods, and tenor of loans.[68]

- **Fourth, introduce appropriate project financing structures, such as lease contracts, and Rehabilitate and Operate contracts**. It is very common now to use innovative project structures as a means of mobilizing finance for water and sanitation services. This is commonly referred to in the infrastructure finance business as "structured finance." Rehabilitate and operate contracts are very commonly used in the Middle East and West Asia to help mobilize financing. In Macau, Senegal, Cote d'Ivoire, Armenia, Poland, the Czech Republic, Morocco and other countries, lease contracts have been excellent models in terms of both performance improvement and providing access to new financing. In many cases over the past decade, water and sanitation projects are financed through a combination of private operator equity and debt, and new public sector loans within the framework of a sound project structure. Both leases and

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ongoing project activities aimed at establishing pooled financing mechanisms. The role of the Eco Asia project may focus on helping the countries share best practices related to these facilities.

[67] The term "loan products" refers to the financial characteristics and objectives of a loan. These would include the tenor, grace period, types of security, and the purposes for which the loan may be used by the borrower. As noted above, in "transitional" situations, loan products should generally fit the transitional capital investment requirements of the water or sanitation utility.

[68] One of the recent operational lending policy developments that is common among development finance institutions is that different loan products are offered depending on the financial condition and capacity of a utility. It is common today for IFIs to stipulate that water utilities that suffer from high levels of non-revenue water will not be eligible to take loans to build major new water treatment plants. This reflects two important considerations of the lender: (1) utilities with high non-revenue water are also generally financially weak, and cannot take on large loan repayment obligations, and (2) the utility could meet its need for additional treated water by reducing losses.

Rehabilitate/Operate contracts are an important area for further innovation in Asia.

This "financing" strategy for Eco Asia Project addresses all these areas: support for transition to bankability, development of appropriate financial institutions and credit products, and introduction of best practices in project finance structures.

4. PILOT STRATEGY AND CANDIDATE PROJECTS

The purpose of pilot projects under the Eco Asia project is to enable Asian partners to develop and share successful solutions to the major constraints facing the development of the Asian water and sanitation sector. Pilots are an opportunity for Eco Asia partners to test and demonstrate innovative reform approaches. Each pilot will involve a local partner designing and testing an innovative solution to a major regional constraint. In addition, the Eco Asia project has a strategy for sharing the results of the pilots with teams of high level decision makers working in each country on these Strategic Focus Areas.

The project will work on approximately 16 pilots during the next four years. At this point, the preliminary list of potential pilot projects includes the following: [69]

- **Continuous water supply for poor consumers in Pune, India**. This pilot is designed to demonstrate three things. First, the pilot will demonstrate that it is feasible to provide continuous (24/7) service to a poor community in Pune. Second, it will develop a business model for sustainable high quality water service to a poor community. Third, it will test the important hypothesis that poor consumers are willing to pay more for water when they receive better service.
- **A model of sustainable decentralized sanitation services in Sri Lanka**. This pilot will demonstrate a sustainable decentralized model of sanitation services. The sanitation services will include septic systems, sewage collection and drainage, and primary treatment facilities. The model is decentralized in the sense that it is a set of locally based utilities. A specific effort will be made to demonstrate that financial sustainability of the services.
- **An Internet-based billing and payment system for water services in Sri Lanka**. This pilot, based on a commercial twinning arrangement between Manila Water and the Water Development Board, will demonstrate the application of already widely available utility billing and collection technology using the Internet. Application of this type of technology is important to increase the efficiency and improve financial performance of a water utility. The pilot serves two purposes: (1) using a commercial contract, Manila Water will help WDB design and install an improved billing and collection system based on the excellent system currently used by Manila Water; (2) the pilot demonstrates the

[69] This list is preliminary, and does not reflect the full range of potential pilots. None of these pilots has been initiated. The list is provided here principally to illustrate the point that the pilots are directly relevant to achieving results in the five Strategic Focus Areas.

potential to transfer critical management technologies on a commercial basis, rather than through donor TA.

- **An improved water utility lending program in Philippines**. LUWA, the agency that provides a large share of financing for water utilities in Philippines, is implementing a new approach to lending. The Philippines has approximately 460 local water utilities. As would be expected, these utilities range from well run, financially strong entities, to deeply troubled utilities. When LUWA was first established, its statutory obligation was to provide loans and grants to all water utilities, including financially strong and deeply insolvent entities. By the early 1990s, the performance of LUWA's loan portfolio was – as would be expected – very poor, with only 35% of loans providing repayments. A decision was made to reform LUWA by allowing it to concentrate principally on the most creditworthy water utilities. This shift in operational policy resulted in a dramatic improvement in LUWA's credit portfolio, to an almost 90% repayment rate. However, the change in credit policy also resulted in the large majority of water utilities in the country becoming ineligible for loans from the principal agency responsible for credit support to the water sector. Recently, a national Executive Order requires reform in LUWA's credit policies and practices so that they become similar to credit norms in the private credit market. A key feature of the reform involves a credit rating system that puts water utilities into one of four categories: creditworthy (A), semi-creditworthy (B), pre-creditworthy (C), and not creditworthy (D). The Eco Asia project will support a pilot to help LUWA operationalize this new credit program. The pilot will involve two main features. First, the project will assist LUWA in designing the appropriate credit products for each category. Second, the project will work with two or three specific water utilities to prepare loan applications using the new credit criteria and credit product framework. The result will be that two or three borrowers will receive loans under a financing system that is both more sustainable and has stronger incentives for performance improvement than the past systems. On a regional basis, this pilot will demonstrate an effective approach to lending to water utilities that are in transition from financially troubled to bankable.
- **Expansion of PDAM Medan water services to rural towns and villages**. This pilot will provide technical support to Medan's water utility, PDAM Medan, in expanding services to outlying villages and towns. Today, PDAM Medan is the best performing water utility in Indonesia. However, although it is responsible for provision of water services on a provincial basis, it has concentrated its services in the city of Medan. One important global trend is expansion of municipal water utilities into regional utilities. This has been an effective means of expanding water and sanitation services in countries such as Armenia, Chile, Cote d'Ivoire, Hungary, Lithuania, Russia, Senegal, Thailand and Uganda. This pilot support a twinning agreement between PWA and Medan PDAM to help Medan PDAM identify an effective business and service model to use in expanding services to selected villages and towns that now do not have adequate service. It is important to implement this expansion in a manner that does not damage the existing excellent performance of PDAM Medan. This will involve identifying a business and servicing model that involves cost recovery, and decentralized management, possibly using innovative profit sharing incentive schemes such as used in other countries that have regional service models. In terms of Asia regional impact, this pilot will

demonstrate a model for strong city utilities to expand coverage on a regional basis using decentralized, incentivized approaches.

- **A corporate development program for Provincial Water Authority (PWA) of Thailand**. Through a twinning arrangement between PWA and the Singapore Public Utilities Board (PUB), PWA will prepare a corporate development plan that will drive the improvement of services, expansion of coverage, and increase the financial sustainability of water services in much of rural Thailand. This twinning arrangement will allow PWA to adopt corporate innovations and techniques that have resulted in PUB becoming one of the best performing water utilities in the world. This demonstrates the value of regional cooperation, disseminates global best practices in water utility governance and management in Asia.
- **A performance contracting framework in an Asian water utility**. In the 1990s, the Provincial Water Authority (PWA) of Thailand adopted a performance management contracting framework. The performance management contracting framework is a key best practice method that has led many water utilities in other countries to dramatically improve performance and sustainability. Introducing a performance agreement accomplished this in Thailand as well, transforming PWA from heavy yearly financial losses, to substantial financial surpluses that support PWA's capital investment program. Under the Eco Asia project, PWA will work with another Asian water utility to design and implement a performance management contracting system. It is possible that a candidate partner can be identified in Vietnam, where some water companies have expressed interest in this type of innovation.
- **Rehabilitate and Operate contract for wastewater treatment in Thailand**. The Royal Thai Government built 83 wastewater treatment plants over the past 15 years. These plants were intended to serve most of Thailand's municipalities. However, after these were built, because of weak business, institutional and regulatory models, the large majority of these plants have ceased to operate. It is estimated that of 83, today, only 6 plants are operational. There is a major opportunity to improve sanitation services through the demonstration of a contracting and business model for returning some of these plants to service. Eco Asia will assist the key stakeholders – a municipality, the Wastewater Management Authority of Thailand, and the Pollution Control Department – in designing and letting a Rehabilitate and Operate contract for one plant. Because the plants are already built, the total cost of providing wastewater treatment service is expected to be relatively low, and the development period to bring a plant on line should be short due to the fact that they were built recently. Possible candidate cities include Hua Hin, Pang Na or Phuket, because they all have non-operational wastewater treatment plants and a significant dependence on tourism, a key driver for demand for wastewater services. This pilot will demonstrate a business case and contracting model for sustainable sewerage service in Asia.
- **A pilot implementation of cost recovery tariffs in Sri Lanka**. Sri Lanka has recently formulated a new tariff setting methodology for water services. This method, however, has not been officially enacted and applied, due to a combination of political and practical implementation concerns. The Eco Asia project will work with the key agencies responsible for water pricing and with two municipalities to conduct a trial

implementation of the new water tariffs. The purpose of the pilot is two-fold: (1) to help the Sri Lankan government and Water Board develop an implementation plan for the new tariff policy, and (2) to identify adjustments to the tariff methodology prior to full national implementation. The result will have major implications for water sector pricing and regulation both nationally and regionally. On the national level, the pilot will help the government with its transition to cost reflective water pricing. On a regional basis, the pilot will demonstrate how an effective new water regulatory system can be introduced and how appropriate transitional approaches needed for successful implementation of cost-based pricing can be designed.

- **Bond pool in Indonesia**. The Eco Asia project may collaborate with the ESP Project and one of the USAID EGAT Water Finance GDA partners to design a bond pool for a group of municipalities in Indonesia. There appear to be a number of local governments (possibly 8) that are interested in issuing bonds to support local infrastructure investment.
- **BRI micro-finance facility for household water connections**. The project will provide technical assistance to design a micro-finance facility for household water connections in a slum area in Indonesia.
- **Water Revolving Fund in Vietnam**. Vietnam does not have a capital market that is necessary for municipal bond issues. However, the country does have several financially strong water companies. Financing of the water sector has been predominantly through a combination of capital grants and subsidies from provincial and central government agencies. In order to transition toward a more sustainable loan-based financing system, the project will provide assistance jointly with one of the EGAT Water Finance GDA partners to prepare a plan for establishing a water and sanitation revolving fund. The purpose of this pilot is two-fold: (1) to establish a sustainable water financing mechanism in Vietnam, and (2) to demonstrate the non-leveraged Revolving Fund model in Asia.

The criteria for selection of the pilots will include the following:

A. The pilot is related to one or more of the five Strategic Focus Areas. The pilot should demonstrate a potential solution that would help to resolve the constraints in the focus areas.

B. There are high-level stakeholders committed to successful implementation of the pilot.

C. The implementation plan for the pilot demonstrates that the pilot can be completed within the time frame and budget available to the Eco Asia project.

Special priority will be given to pilots implemented through a twinning or commercial arrangement between an Asian best practice leader and a utility trying to improve its performance.

5. MECHANISMS FOR REGIONAL SHARING OF BEST PRACTICES

The strategy is implemented at two levels:

- Regional workshops and conferences that allow the sharing of best practices, discussion of policy and governance reform approaches, and twinning.
- Pilot projects that demonstrate solutions to key water and sanitation development constraints.

There will be three different types of regional experience sharing mechanisms:

- Annual water and sanitation development conferences involving all of the participating countries in the region;
- A Water and Sanitation Leadership Forum, comprised of representatives of each participating country.
- Water and Sanitation Innovation Panels in key technical areas, possibly such as:
  (1) Service Models for the Poor;
  (2) Business Models for Sanitation Services;
  (3) Innovative Corporate Governance;
  (4) Water Pricing and Regulation; and
  (5) Innovative Water Financing Models.

These three mechanisms reinforce the sharing of regional innovations and best practices. The Leadership Forum would consist of high level officials including both utility operators and policy makers with strong ties to senior decision makers in each country. The Leadership Forum would be responsible for setting the agenda and general design of each annual Water and Sanitation Conference. In addition, they will help with resolving issues related to pilots and will advise on engaging the policy change process in each country. The Innovation Panels would consist of relatively senior specialists in the respective areas covered by the panels. They could establish a technical innovation agenda, manage best practice discussions in their respective areas, and will advise Eco Asia staff on the technical content of the Annual Conferences.

6. COUNTRY ASSESSMENT PURPOSE AND METHODOLOGY

The purpose of the country water and sanitation assessments is to provide a summary of each country's status, conditions and opportunities in the five Strategic Focus Areas. These assessments are intended to provide a comparable statement of progress and critical deficiencies in the Strategic Focus Areas.

The Country Assessments will be organized generally around the five Focus Areas, using the following outline:

A. **Overview of Water and Sanitation Services in the Country**: This section gives an overview of the status of services and coverage in each country. Key indicators will be presented when available, including percentage of coverage with water and sanitation services, average hours of water service, percent of wastewater treated, level of cost recovery, annual national budgetary allocation for water and sanitation infrastructure, and any information on piped water quality. (1 page)

B. **Water Coverage for the Poor: Key Issues and Challenges**: This section summarizes available information on water services for the poor. It should provide an idea of whether water services are reaching the poor, and whether the poor have access to formal networked systems or rely on informal markets for water. Water quality in poor areas should be summarized if data are available. Pricing of water for the poor will be summarized, including some comment on pricing policy for services for poor consumers, and how these prices relate to cost recovery.[70] Comments will be provided on the cost recovery situation for formal water services for the poor. This section will generally be based on a composite of secondary data and reports. This data will often be specific to certain cities or provinces, and may not include information on slum populations, or rural poor as specific sub-populations. (Approximately 0.5 page)

C. **Sanitation Service Development: Key Issues and Challenges**: This section will summarize key issues related to operation and expansion of sanitation services. Included in this section will be topics such as annual budgetary expenditures on sewerage and other sanitation services, coverage expansion rate and patterns, key policies with respect to sanitation development, and pricing and cost recovery for sanitation services. The purpose of this chapter is to provide an indication of progress in extending sanitation coverage in the country. (0.5 to 1 page)

D. **Corporate Governance of Water and Sanitation Utilities**: This short section should summarize the predominant models of service delivery, and provide evidence and commentary on key deficiencies, trends and reform initiatives related to corporate governance of water and sanitation utilities. Key trends related to reforming utilities to make them more autonomous, efficient and commercially-oriented will be identified. The main question that should be addressed is whether there is significant progress in governance arrangements for water and sanitation services.[71] (0.5 to 1 page)

E. **Water Pricing and Regulation**: This section will briefly summarize the general pattern of cost recovery, the principal approaches to price setting that are in use, and efforts to develop more systematic and effective economic regulation of water and sanitation services. (Approximately 0.5 page)

F. **Innovation in Water Financing: Key Issues and Challenges**: This section will summarize the key specialized financing mechanisms for water that are in operation. In addition the section will identify reform initiatives in these institutions, key performance

[70] The purpose of the information on prices and cost recovery for the poor is to provide the Eco Asia project and USAID a sense of whether (1) prices are held at levels significantly below cost recovery, and (2) whether there is an explicit policy or initiative of government to create more sustainable prices.

[71] The main focus here is on "corporate governance." However, key initiatives related to civil governance of the water utility sector should also be included.

problems, and new institutions or mechanisms that are being considered or established. (Approximately 0.5 page)

Each report will be 5 to 7 pages. The reports will provide an overview of the key constraints in each Focus Area, and will identify areas in which reform is occurring. The reports will be short, and will generally be based on inputs from experts who work with each of the participating countries.

7. PLAN TO ENGAGE KEY REFORM ADVOCATES

Many of the constraints facing the water and sanitation sectors in Asia are a combination of policy, governance and managerial issues. In some countries in the region, there are significant national or local initiatives underway aimed at introducing basic reforms in key areas that tend to have major impacts on expansion of water and sanitation services. Key reforms include, but are not limited to, the following:

- Corporatization
- Performance management contracts and performance incentive frameworks
- Economic regulation
- Benchmarking
- Private sector participation

Eco Asia will engage stakeholders at all levels. However, the project will only achieve major results if senior policy makers are involved. The challenge is to engage senior policy makers in issues related to each of the Strategic Action Areas. The following steps will be taken by the project to engage senior policy makers:

- The Eco Asia team will identify key reform initiatives in each country as part of the country assessment process. The key reform initiatives that would be of interest would be related to the five Strategic Focus Areas: Service Models for the Poor, Business Case for Sanitation, Innovative Governance Reforms, Improved Pricing and Regulation, and Innovative Financing.
- The team will discuss these reform initiatives with key sector experts to determine (1) which are progressing well and are supported by high level stakeholders; (2) who are the key high level stakeholders who support these initiatives. Key sector experts would include leading World Bank and ADB sector specialists, senior academics and policy advisors working at high levels of policy in the countries, and officers in line ministries directly concerned with policy reform issues.
- In consultation with the USAID bilateral mission, the team will approach selected reform supporters and will discuss potential for Eco Asia pilots to help with these reforms.

8. ADDITIONAL IDEAS

- It is important to note that the region's utility operators are not at a sufficiently high level of policy control to be able to push the reform agenda on the key areas that are constraints to development of water and sanitation services. Higher level policy makers are required to advocate reform. Therefore, SEAWUN, being an operators' network, is not the right counterpart for actually advocating change along the broad fronts required. It is, however, probably adequate to provide a venue for higher level policy making discussions and advocacy. It will probably need the Leadership Forum and various technical panels to make it relevant to the reform issues.
- Credit capacity and cost recovery are two core issues in expanding the coverage and quality of water and sanitation services. It is important for the project to coalesce attention among policy makers, financial institutions and utility operators on this issue. Approaches to this issue could be developed by a working group consisting of CRISIL, IDFC, LUWA, and Indian Institute of Management – Bangalore, or another of the Indian business management institutes, all of which have direct interests in the creditworthiness and cost recovery issue. The purpose of focusing attention on this issue is to identify ways of raising the importance of cost recovery and creditworthiness in the national policy process in each country.
- It is worth considering support for a pilot in which one of the Asian institutions that is traditionally involved in management and corporate reform assists a water or sewer utility in introducing a major corporate innovation, such as performance contracting. Candidates would be the Asian Institute of Management, or the Administrative Staff College of India, or one of the IIMs in India. These institutions are often tasked by their respective governments with leading reform pilots using best practices. Staff in these institutions often have strong links to senior national policy makers, and can be effective allies in reform-related pilots.
- The project could support a workshop on pooled financing that covers the following areas: (1) review of results of innovative financing facilities such as TNUDF and KSIDC facilities, LUWA credit procedures reform, and Singapore national system for infrastructure finance; (2) a panel of insurance company and pension fund executives discussing preconditions for marketability of infrastructure bonds issued by pooled financing facilities; (3) suitable models for transitional borrowers. Key stakeholders in most Asian countries covered by Eco Asia have already been exposed to the concepts of revolving funds and bond pools. Generic workshops that simply present the U.S. model are not likely to achieve much because of the prior exposure. It is now time to move on to (1) sharing the results and lessons learned from pooled financing experience, (2) engaging the capital markets – principally pension funds and insurance companies – in a dialogue on the design of pooled financing facilities, and (3) brainstorming on new facilities suitable to the transitional challenges in the region.

- The project could consider sponsoring an internship program that would send 2 to 4 counterpart experts to key institutions that are implementing innovative efforts in the five Strategic Focus Areas. It is interesting to consider making these internships available on a somewhat competitive basis in the 5 Focus Areas. The announcement of the annual internships could then be made at each Annual Water Workshop.

ANNEX 1: STRATEGIC FOCUS AREA SUB COMPONENTS

Effective models for serving the poor.

- **New methods of billing and collection from poor customers**
- **Sustainable pricing and tariff designs for poor customers**
- **Appropriate service connections, including community standpipes, yard pipes, wholesale vending points**
- **Cooperative and other community based distribution service models**

A sustainable business case for sanitation services.

- **Cost reflective pricing and regulation approaches**
- **Community based service models**
- **Low cost technologies**
- **Innovative use of private sector contracting**
- **Innovative billing and collection methods**

Innovative governance of water and sanitation utilities. **Regulation, price setting and cost recovery**.

- **Corporatization models**
- **Mechanisms for allowing commercial autonomy of the utility**
- **Performance contracting**
- **Mechanisms for establishing accountability to external stakeholders**
- **Mechanisms for establishing decentralized authority within the utility**
- **Mechanisms for providing incentives for good performance**
- **Mechanisms for internal accountability and performance measurement**
- **Mechanisms for improving customer responsiveness**

Financing mechanisms for water and sanitation services.

- **Specialized financing facilities**

- **Revolving Funds**
- **Bond Pools**
- **Specialized Lending Windows at Established Financial Institutions**

- **Loan products appropriate for utilities in transition**
- **Project financing structures and structured finance models**

ANNEX B: IMPORTANT REFORM TRENDS IN THE WATER AND SANITATION SECTOR

A review of operational policy and research on water sector reform in developing countries shows some important trends among both donor agencies and developing country host governments. Listed below are a number of the key trends, supported by references to examples and documents that represent the trends.

Trend 1: Performance improvement initiatives are not enough to solve the problems in the sector.

There is a broad consensus among donor experts that performance improvements such as NRW reduction program, metering, leak detection and repair programs, and billing and collection system installation alone is not enough to establish sustainable utilities. For example, the World Bank's recent report titled Characteristics of Good Performing Water Utilities states:

> "Today, there is a good understanding that past approaches to and interventions in reform will not work. The record has been poor. Part of the reason for this failure is the fact that efforts were inordinately focused on changing the utility by strengthening its management and its processes, but without making commensurate advances on the governance framework or the institutional environment in which the utility operates. In the end, utility managers respond according to the wishes of important external stakeholders, most notably national government, municipal officials, community leaders, and lenders. Misdirected incentives on their part will have direct consequences for the internal incentive systems of utility managers and their staff."[72]

Similarly, the ADB's report on Asian Water Supplies: Services for the Poor makes a clear and repeated point that the principal reason that the poor are underserved in the region is weak governance of water utilities, and prices that are set too low to make it feasible to serve poor communities. It is extremely difficult to "improve performance" when the governance arrangements of the sector are not working.[73]

The EBRD and EIB have published similar sector policies that emphasize the importance of (1) effective economic regulation; (2) better corporate governance at the utility level; and (3) private

[72] Page 24.

[73] For a specific example of the governance challenge, the Thai wastewater treatment example is useful. Eighty three plants were built and only about 6 are operating. The capital and technology is already available; they are built and could be operational. However, the sector lacks a business model for operating them, and the corporate and civil governance arrangements to make any decisions about putting them into service are not working.

sector participation to the extent possible. In addition, the EBRD has explicitly acknowledged that in some countries, local governments have not been able to expand and run services that meet adequate standards, and therefore numerous countries have chosen to "agglomerate" utilities so that they are either regional or national in scope.[74] This is a basic change in the corporate organization and governance of water and sanitation services that has been relatively effective in improving services.

A number of important studies have also been conducted on reform of public enterprises more broadly. One of these[75] concluded that achieving significant improvement in public enterprise performance requires change of management, and that performance improvement efforts alone with ineffective management is not sufficient. A second study of performance agreements in public enterprises concluded that performance agreements generally are not sufficient to fix troubled public enterprises.[76]

USAID's Water Team recently conducted a review of nine water utilities that have transitioned from deeply troubled to bankable. In most of these cases, success in transition was a result of basic reforms in corporate organization, internal incentives for good performance, management or governance.[77]

The overall conclusion that one would reach after reviewing these various donor policies and studies is that improving water and sewerage utilities will require changes in the governance, management and incentives of the utility.

Trend 2: Innovations in Private Sector Participation

There have been a number of innovations in the design of PSP contracts in the past 5 years. In the 1990s, the most common models used in developing countries in the water sector were: management contracts, BOTs and full concessions. Management contracts suffered from too many performance indicators and excessively small bonuses. Operators generally stated that they had little incentive to transform the utility, and host governments complained that the operators were not doing enough to fix the utility.[78]

BOTs were successful in situations where the distribution side of the water or sewerage business was performing well. In places where collection efficiency was low and non revenue water was high, BOTs were often unaffordable, because there was not enough cash in the system to pay the BOT operator charges.

The concession model was popular with donors from about 1995 to 2003. Concessions were let in Buenos Aries, Bucharest, La Paz, Jakarta, Manila, and several other Argentine and Colombian

[74] See the EBRD Municipal and Environmental Infrastructure Operations Policy 2004-2008.
[75] The Determinants of Enterprise Restructuring in Transition: An Assessment of the Evidence, Simon Djankov and Peter Murrell, World Bank, 2000.
[76] "Why Performance Contracts for Public Enterprises Haven't Worked." Mary Shirley, Private Sector Note 150, World Bank. August 1998.
[77] Case Studies of Bankable Water and Sewerage Utilities. USAID, August 2005.
[78] This assessment of management contracts is based on discussions with officials involved in the Yerevan, Armenia, Amman, Jordan, Dar Es Salam, Tanzania and Kampala, Uganda management contracts.

cities. By and large, these contracts have had serious difficulties, although there have been several exceptions, most notably the Manila Water contract. Buenos Aries, La Paz, Maynilad, Tucman (Argentina) have been cancelled or are in arbitration. Jakarta's two contracts have been in repeated renegotiation and disputes. The reasons for the difficulties are a combination of the macro-economic shocks that have occurred since 1997, deficiencies in the basic regulatory conditions of these contracts, and performance deficiencies by the parties involved. Given this experience, there is little effort to replicate the full concession model now, and no appetite for these types of contracts in the operator community.

The fourth model that has generally been prevalent has been the French version of the lease contract, often called an affermage. The affermage contract has been used generally successfully in places like Casablanca, Morocco, Senegal, Cote d'Ivoire, Burkina Faso, a dozen cities in Poland and the Czech Republic, several Colombian cities, Macau. Recently an innovative version of the affermage using Output Based Aid was awarded for water and sewerage services in Yerevan, Armenia.

Of the four models, the lease/affermage and updated versions of management contracts are the preferred PSP approaches recently. Management contracts have been updated in the following ways:

- The number of performance targets and measures used to award bonuses has been reduced;
- Bonuses are now dependent on performance relative to the most important performance outcomes, such as increases in number of connection, continuity of service, and gross profit of the business.
- Clearer terms for resetting allowed operator charges have been incorporated in the contracts.

It is important to note that there is a broad recognition now that when the distribution side of a water business is performing poorly, it is usually not feasible to use BOTs for bulk water supply or wastewater treatment.[79] Therefore, the focus of most donor efforts in the PSP area have tended toward management contracts and leases that "fix" the distribution side of the water business.

It is also notable that some innovative public sector performance contracting methods have also become more effective and widespread. The best example is perhaps the "delegated management contract" system used by Uganda National Water and Sewerage Corporation. Similar models have been successfully used for years in the electricity sector; the main examples of this are the Bangladesh Power Development Board's profit center unit approach, and Electricite de France's performance target approach.

Trend 3: Improved regulation helps with transition to sustainability

[79] There are exceptions to this, such as the Jordan As Samra BOT wastewater treatment plant and the Disi Bulk Water Pipeline Project. These projects are feasible because of a combination of donor grants and central government operating cost subsidies.

USAID recently conducted a review of high performing water utility regulators in developing countries. Nine countries with excellent regulatory systems were identified, including one in Asia, one in the Middle East, three in Africa, one in Eastern Europe, and two in Latin America. Key conclusions of this study include:

- Establishing good regulatory methods and effective regulatory frameworks has been a very important step in moving a country's water utilities toward cost recovery. There is no question that good regulation is a major factor driving transition to cost recovery.
- To be effective, there must be "regulatable utilities." This means that utilities must be responsive to regulatory incentives and penalties. This refers mainly to the difficulties that regulators face when utilities are public sector bodies.
- Cost recovery has many different definitions. The definition of cost recovery ranges from recovery of operations and maintenance costs, through recovery of all cash needs of the utility (often called a "revenue requirements" approach), to "Full Cost Recovery." Full Cost Recovery refers to recovery of all "economic" costs, which include O&M, additional costs which are imposed on the utility, such as pensions, and capital costs, including both debt service charges and depreciation. Most regulators seek first and foremost to incentivize a utility to meet their basic cash revenue requirement. Full Cost Recovery is a longer term objective, and is achieved by very few utilities in the study.
- Most regulators are dealing with the introduction of new cost-reflective tariff methods by designing transitional periods in which tariffs are gradually adjusted toward cost recovering levels.

Trend 4: Regionalization of water and sanitation services works

Decentralization has been a trend that has been advocated by donor agencies for the last 30 years. Many countries have implemented decentralization policies in the water sector. Results have been mixed, with some local governments showing excellent progress in expanding the quality and coverage rates for water and sanitation services. In other countries, however, national policy makers have been frustrated with lack of progress. This has led to a "recentralization" trend in the water sector. The "recentralization" trend involves national governments passing laws and regulations that establish either national utilities or regional providers.

Reasons for this trend include:

- Larger utilities have greater economies of scale. It is often cheaper for large utilities to provide service (when measured on a per cubic meter cost) than for a small utility.[80]
- Providing technical capacity. In addition, when large regional utilities extend services to outlying towns and villages, the large utility can afford to retain qualified business management and engineering staff that would be unaffordable for small utilities.

[80] See for example, "Optimal Size for Utilities," Public Policy for the Private Sector Note 283, World Bank, 2005; "Models of Aggregation for Water and Sanitation Provision," Water Supply and Sanitation Working Notes No. 1, World Bank, 2005.

- Sufficient scale for PSP transactions. Some countries have agglomerated utilities to make it feasible to carry out a PSP transaction. This reflects the cost of designing and tendering the transaction, as well as the fact that international bidders have little interest in running individual small utilities.
- Dealing with persistent corruption and civil governance problems. In some cases, national governments and donors have tried valiantly to reduce local government corruption or to strengthen local government capacity to develop local water and sanitation services without achieving positive results. In some of these cases, national governments have decided to centralize service delivery in order to limit the role of local governments.

To give an idea of the frequency of this "agglomeration" trend, here are some examples of countries that have regional or national water and sanitation utilities:

National: Armenia, Azerbaijan, Burkina Faso, Cote d'Ivoire, Guinea, Morocco (only bulk water), Senegal, and Uganda.

Regional: Australia, Chile, Czech Republic, England and Wales, Estonia, Kosovo, Hungary, Macedonia, Lithuania, Poland, Romania, Russia (in some jurisdictions), Scotland, Thailand.

Annex E: Blue Revolution Initiative

BLUE REVOLUTION INITIATIVE

STRATEGIC FRAMEWORK FOR ASIA AND THE NEAR EAST

Bureau for Asia and the Near East
United States Agency for International Development

May 2006

Table of Contents

1. Introduction

Water touches all aspects of people's lives and plays a central role in every country's development. Its availability impacts food production and nutrition, city development and growth, income generation and livelihood, and human health and hygiene. Water is also a moving resource. It links lowlands and mountains, and urban populations with rural upland dwellers. Its management reflects the strengths and weaknesses of local, national and international governance systems and the relationships between countries that share water resources.

Our universal need for water means that it can serve as a good medium for engaging citizens in participatory planning and governance around watershed protection and water management, encouraging greater transparency of local and national institutions, and promoting more equitable access to water and related services. Financing water-related infrastructure is proving to be a good vehicle for developing innovative, pro-poor, and more sophisticated financial markets. The need to improve the management of rivers and aquifers is proving to be an effective vehicle for engaging countries in dialog and partnerships that establish the foundation for broad-ranging cooperation on resource use, mutual security, and even trade.

USAID's Asia and Near East region (ANE) extends from Morocco in the West to Mongolia, Philippines and Indonesia in the East. The population of the region, now 3.6 billion and expected to exceed 4.0 billion by 2015, and the concomitant growth in demand for food, jobs, and housing are placing extreme pressures on the region's fresh water resources, and contributes to the severe degradation of existing surface waters. While the region as a whole has plenty of water, the Near East and parts of South Asia face extreme shortages now. With the exception of the oceans, no potential new water resources remain untapped. Countries like Jordan, Kuwait, Libya, Oman, Saudi Arabia, and Yemen are overcoming their shortages by tapping deep, finite groundwater resources or investing in expensive and vulnerable desalination facilities. However, the over-extraction of fossil and replenishable groundwater only ensures fewer future management options. With growing water scarcity comes increased potential for local, national and regional conflicts over water resource allocation, use and contamination. Avoiding these conflicts and meeting the needs of the region's growing population demands using the existing renewable water supplies more efficiently, reallocating water from agriculture for other growing needs, and augmenting existing supplies through better delivery management, demand management, recycling and desalination.

A particular concern is the lack of adequate access to safe water and sanitation for a significant percentage of the region's populations. The ANE region contains three-fourths of the world's population without adequate access to safe water and sanitation services. In spite of decades of achievements through donor, lender and national government investments, approximately 20 percent of the region's population still lacks safe, reliable drinking water and almost 45 percent have no access to hygienic sanitation. This situation particularly impacts the urban and rural poor who suffer disproportionately in terms of the cost of water and impact on their health. Over 500,000 young children die from water-borne diseases in the region each year. Inadequate sanitation has contributed to the extensive pollution of fresh water resources, exacerbating pressure on remaining water resources. In 1990, the world's nations established the millennium development goals (MDGs) that include improving access to safe water and sanitation. To achieve these MDGs, countries committed to reducing by half the number of people without access to safe water and basic sanitation by 2015. Achieving these goals in the ANE region

requires expanding access to safe water and basic sanitation in the ANE region to more than 700 million and 1.3 billion people respectively. In recent reporting, only 6 of the countries in the region are on track to meet this DG target.

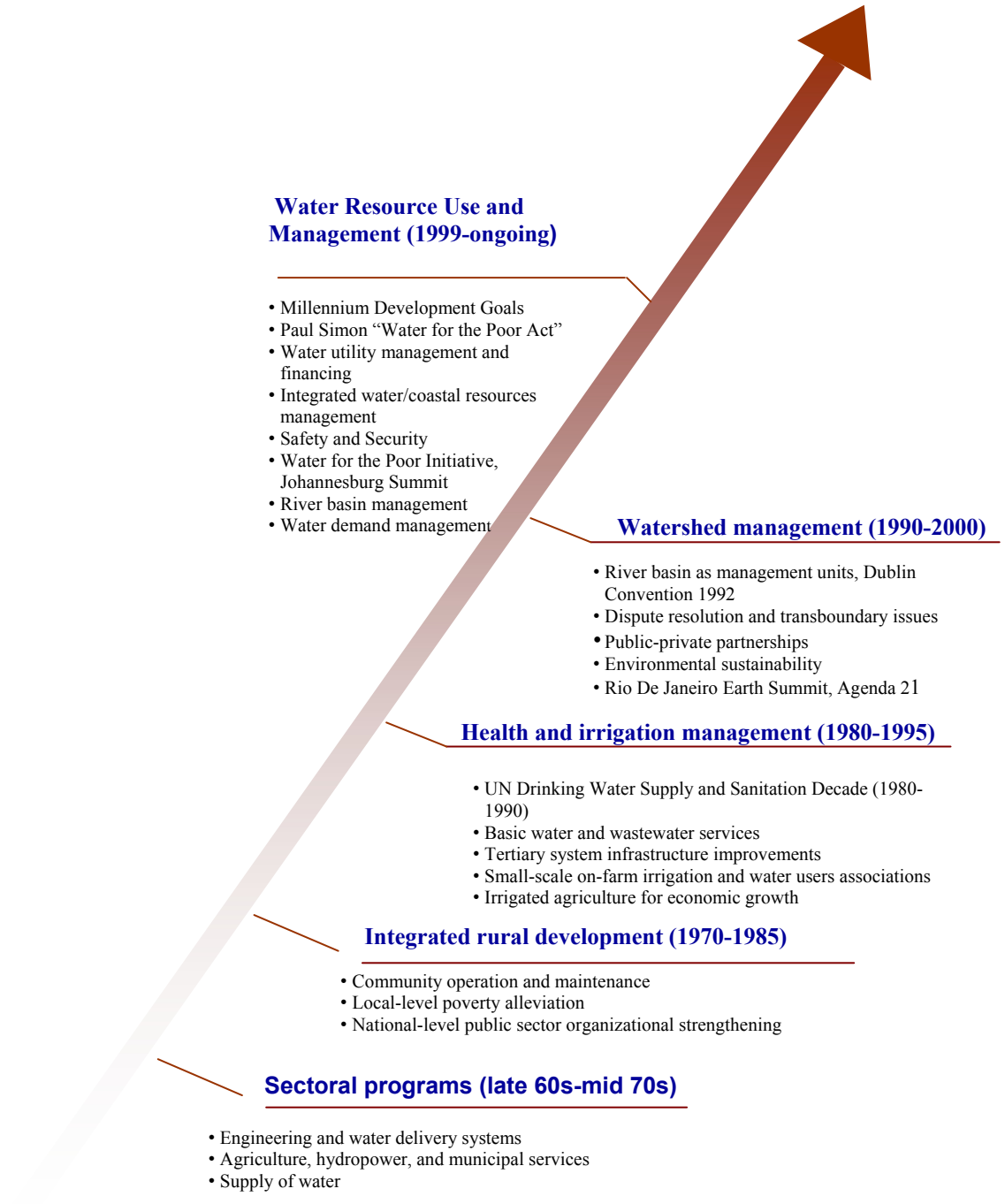
While the situation is challenging, all is not bleak. The region has experienced considerable progress addressing the above challenges over the past fifty years. USAID has played a significant role in much of this progress.

The evolution in water resources management thinking and practice from the sectoral programs of the late 1960s reveals how far we have come and how significant are the challenges that remain, as shown in Figure 1. The trends have changed: from the early single-discipline approaches that focused on supply (the supply of drinking and agricultural water, for example, or of hydropower) and related engineering solutions, to the integrated area development plans of the 1970s—that now seem top-heavy and forgetful of the poor—to the introduction of sanitation and health as parallel streams to water management in the 1980s. This thinking evolved again in the 1990s with the use of hydrological boundaries (such as catchments, watersheds, and river basins) as management units, and the associated realization of the need for transboundary dispute resolution, be those boundaries administrative, jurisdictional, inter-state, or international. In the past few years, the international community has refocused efforts again on providing safe water and basic sanitation to the millions of people that have no access to these essential services. Today, donors like USAID place greater emphasis on improving utility management and mobilizing domestic and international capital through innovative financial approaches to expand infrastructure. Already, we begin to see system security and safe water planning as emerging trends in the sector.

Amid these shifts, the international community has taken notice of the different roles played by men and women in water use. Women have a particularly important role to play in the water sector, as principal providers and carriers of water, as main caretakers of the family's health, and as farmers, fishers, post-harvest processors, and traders. An increasingly high and deserving premium has been placed on understanding the differing roles of men and women within the decision making process related to water resources allocation, price and use. Yet, even after 50 years we continue to see a very small number of women in decision-making positions in the sector.

These shifts in approaches to water resources management reflect USAID's constant learning and adaptation in response to evolving needs, priorities and lessons learned over the past fifty years. They also reflect USAID's intellectual leadership that has helped shape other donor efforts to improve the availability and management of water resources. For example, in drinking water supply and sanitation, USAID expanded the role of the private sector in financing and managing these services by pioneering, in the 1990's, the use of Build-Operate-Transfer (BOT) mechanisms to attract international experience and investment in water services.

Figure 1: A Half Century of Progress in Water Resource Management



More recently, programs like the FIRE-D in India and FORWARD in the Philippines have supported ground-breaking work on water revolving funds and innovative approaches to mobilizing domestic financing for water and sanitation infrastructure.

In transboundary water management, USAID has helped lead efforts to enlist country cooperation and commitment to better management of shared waters. For example, USAID supported efforts to improve the management of the Aral Sea and the Kura-Araks River in the Caucuses. The USAID Regional Development Mission/Asia recently launched an Eco-Asia program that will provide support to the Mekong River Commission and also look for opportunities to improve transboundary water management in South Asia.

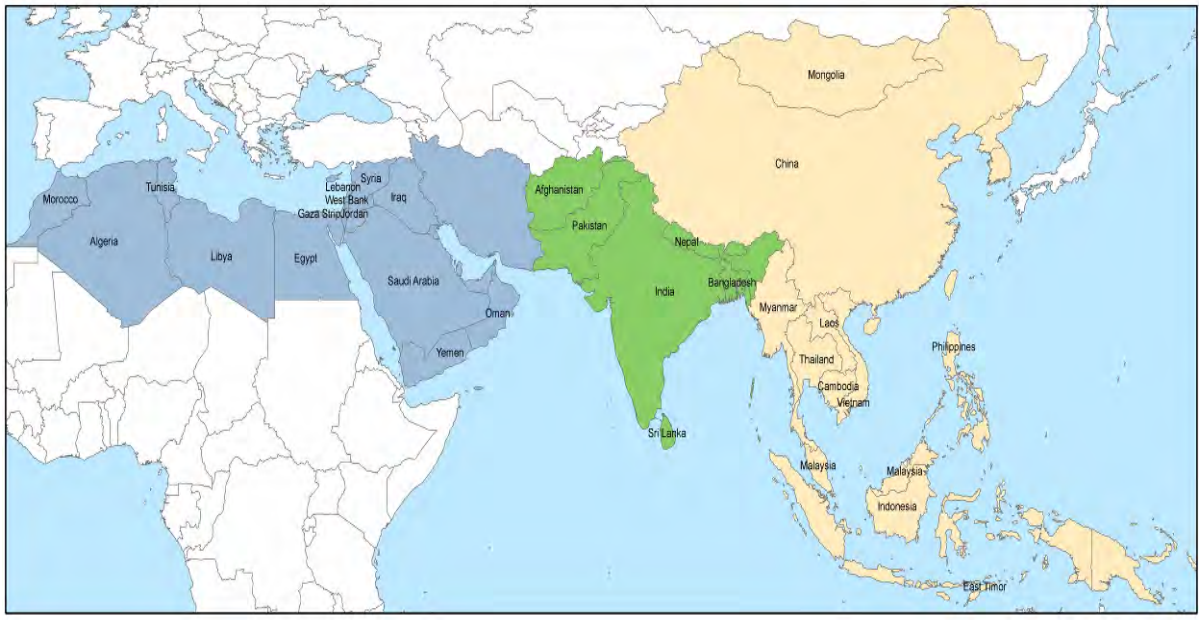
To ensure equitable emphasis on infrastructure access and its hygienic use, USAID developed the Hygiene Improvement Framework which has been endorsed by UNICEF, the International Reference Center on Water Supply and Sanitation in the Netherlands, and the World Bank's Water Supply Program to guide preparation, implementation, and evaluation of integrated water, sanitation, and hygiene programs.

Finally, USAID has focused on the need to improve utility operations and governance if countries are to achieve the MDG targets for water and sanitation. Many USAID offices around the world now support programs to strengthen utility operations and governance, including benchmarking utilities against international performance standards. Examples include ongoing programs in Indonesia, Jordan, Lebanon, and the Philippines. USAID's new regional program, Eco-Asia, also supports the Southeast Asia Water Utilities Network (SEAWUN) and its efforts to promote the adoption of performance benchmarking among SEAWUN's member utilities.

2. Overview of Water Resources in the ANE region

Virtually every country in the region faces significant challenges managing its water resources to balance environmental requirements with growing population and economic demands. In most countries, unabated pollution, especially in urban areas, has significantly degraded water quality further complicating this challenge.

Figure 2: The ANE Region



The region's diversity can be better understood in the context of its three principal subregions: Near East, South Asia and Southeast Asia.

2.1 Near East

The Near East (NE) subregion is the most water scarce region in the world. While it controls 70 percent of the world's known oil reserves, it has less that one percent of the world's renewable freshwater resources. It is defined largely by drought and desert, and suffers from the scarcity of fresh water, uneven availability, a growing gap between supply and demand, deteriorating water quality, and dominance of agricultural water use. Home to five percent of the world's population, the NE has an average per capita annual water supply of 900 m^3/person/year that masks extreme shortages in places like Gaza and Jordan that receive less than 150 m^3/person/year (Table 1). High population growth rates (average 2.1 percent) increase pressure and competition for scarce water resources and given the region's a history of conflicts could stoke smoldering religious, political and economic tensions.

Agriculture remains an important component of the region's economy, contributing as much as 23 percent to GDP, employing between 25 and 30 percent of the workforce, and consuming more than 80 percent of the total annual water resources. Growing populations and accelerating urbanization, combined with the expanded commercial cultivation of crops with high water demand have stimulated over-abstraction of groundwater resources and degrading water quality. The over-abstraction of surface and ground waters threatens critical aquatic ecosystems in many

countries in the region. For example, the Sadam Hussain regime drained the Iraq marshlands, one of the region's most important wetlands. Today, efforts to restore these marshlands are hampered by the demand for and withdrawals of water from the Tigris and Euphrates upstream

TABLE 1: RENEWABLE WATER RESOURCES IN THE NEAR EAST

Government	Total Available Water/Yr (BCM)	Per Capital Water m^3/p/yr (2005)	Per Capita Water m^3/p/yr (2015)	Withdrawals as % of Total Available Water (2005)	% Population with Access to Safe Water & Basic Sanitation (2000)	Withdrawals by Sector		
						Ag	Industry	Domestic
Algeria	14	426	368	36%	87/92	52%	14%	34%
Egypt	58	783	658	114%	98/68	82%	11%	7%
Iraq	75	2,604	2,056	57%	81/80	92%	5%	3%
Jordan	1	175	144	100%	91/93	75%	3%	22%
Lebanon	4	1,118	1,009	32%	100/98	68%	6%	27%
Libya	1	171	142	450%	72/97	84%	3%	13%
Morocco	29	921	802	40%	80/61	89%	2%	10%
Oman	1	390	315	170%	79/89	94%	2%	5%
Saudi Arabia	2	81	65	1,295%	n/a	90%	1%	9%
Syria	26	1,365	1,092	46%	79/77	90%	2%	8%
Tunisia	5	495	449	56%	82/80	86%	1%	13%
West Bank/Gaza	-	-	-	-	94/76	-	-	-
Yemen	4	191	140	72.5%	69/30	92%	1%	7%
Total	**220**	**836**	**689**	**80.6%**	**78/65%**	**83%**	**4%**	**13%**

of the marshes for agriculture, urban and industrial needs. In Northwestern Tunisia, the fragile salt balance of the Lake Ichkeul, which provides a unique habitat for migratory waterfowl, is endangered by diversions from its tributary rivers. In the Nile Delta, Lake Manzalah is also threatened by changes in flow patterns and pollution. Azraq oasis in the western part of Jordan, which used to be an important resting point for migratory birds, has already almost completely dried up from overexploitation of the aquifers feeding the oasis. While countries in the Near East, in general, have made excellent progress meeting current demand for water and sanitation services (with the exception of Yemen), they must continue expanding water and sanitation systems to another 62 to 76 million people to meet the MDG goals for safe water and basic sanitation by 2015.

Meeting the needs of the region's growing economies and populations requires both the development of new water resources (i.e. desalination) and reallocating water from agriculture for urban and industrial needs. To shift water from agriculture successfully will require improving the efficiency of water use to maintain and even increase agricultural productivity with less water resources.

2.2 South Asia

South Asia is home to 1.5 billion people. Forty percent of the population earns less than US$1.00 a day, and accounts for about half of the world's poor. Agriculture is crucial to South

Asia's economies. It employs almost 70 percent of the workforce and generates 32 percent of region's GDP. Expanded adoption of irrigated agriculture along with improved crop varieties and expanded use of fertilizer fueled South Asia's successful green revolution in the 1960's and 70's. For example, irrigated land in India has expanded six-fold to 36 million hectares since 1951. Groundwater now supplies more than half of India's total irrigation water. However, subsidized electricity and water, weak regulation of water allocations, and poor irrigation water management have encouraged the over-extraction of groundwater that has led to falling water tables in many parts of South Asia.

Many people in South Asia still lack access to safe water and basic sanitation. While countries report that approximately 84 percent of their people have access to piped water (Table 2), in many cases this means a standpipe that operates a few hours a day or week, and may be located some distance from an individual's residence. With populations expected to reach 1.7 billion by 2015, achieving the MDGs requires expanding access to safe water and basic sanitation for more than 300 million and 600 million people respectively. Meeting these needs will require a shift of water resources from agriculture to urban and industrial sectors.

TABLE 2: RENEWABLE WATER RESOURCES IN SOUTH ASIA

Country	Total Available Water/Yr (BCM)	Per Capita Water m^3/p/yr (2005)	Per Capita Water m^3/p/yr (2015)	Water Withdrawals (% of Total)	% Population with Access to Safe Water & Basic Sanitation (2000)	Withdrawals by Sector		
						Ag	Industry	Domestic
Afghanistan	65	2,177	1,570	40.2%	13/8%	99%	0%	1%
Bangladesh	1,211	8,539	7,202	1.2%	75/48%	86%	2%	12%
India	1,897	1,719	1,505	26.4%	86/30%	92%	3%	5%
Nepal	210	7,740	6,413	13.8%	88/61%	99%	0%	1%
Pakistan	223	1,412	1,153	69.8%	90/54%	97%	2%	2%
Sri Lanka	50	2,411	2,243	19.6%	78/91%	96%	2%	2%
Total	**3,656**	**2,469**	**2,128**	**20.1%**	**84/35%**	**95%**	**2%**	**4%**

2.3 East Asia

For our purposes, East Asia includes Southeast Asia, China and Mongolia. This region is home to more than 1.8 billion people. Fortunately, it is blessed with considerable fresh water resources. Inefficient use and poor water management combined with rapid urbanization have led to water depletion in certain areas with greatest demand. China faces the most extreme situation where over abstraction of ground water to meet agriculture, industrial and urban needs in the Northern part of the country have caused a significant drop in river flows and ground water levels. For example, the water table under Beijing has fallen more than 59 meters[81] since 1965. While agriculture generates a shrinking share of GDP in most Southeast Asian countries, it still employs more than 50 percent of the workforce and accounts for more than 80 percent of all water consumed.

According to the WHO, approximately 80 percent of the population in SE Asia has access to improved water supplies and 50 percent to basic sanitation services (Table 3). Meeting the MDGs will require the expansion of safe water and basic sanitation services to an additional 336 million and 581 million people respectively.

TABLE 3: RENEWABLE WATER RESOURCES IN SOUTHEAST ASIA

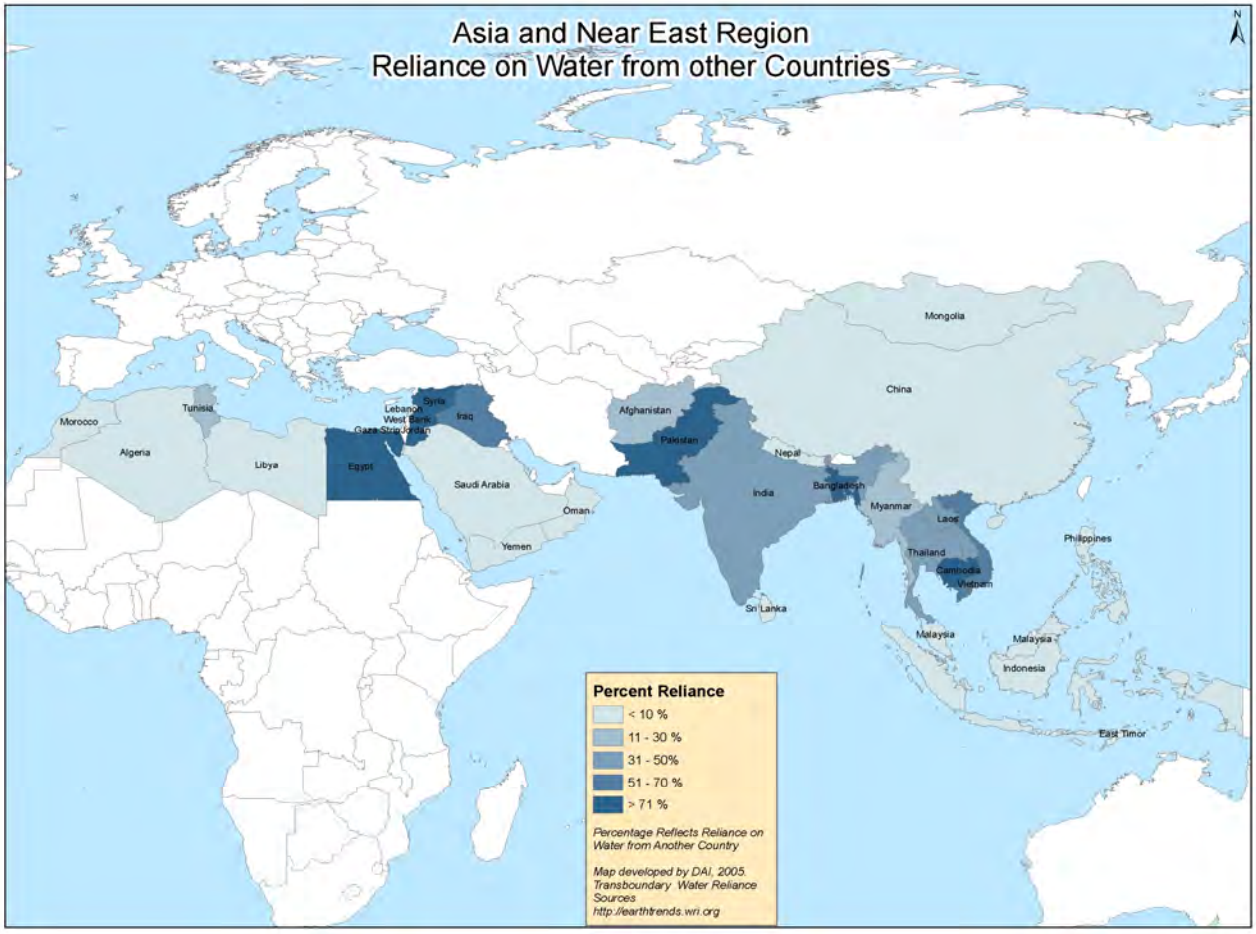
Country	Total Available Water/Yr (BCM)	Per Capita Water m^3/p/yr (2005)	Per Capita Water m^3/p/yr (2015)	Water Withdrawals (% of Total)	% Population with Access to Safe Water & Basic Sanitation (2000)	Withdrawals by Sector		
						Ag	Industry	Domestic
Burma	1,046	20,705	19,029	0.4%	80/73	90%	3%	7%
Cambodia	476	33,828	27,892	0.1%	34/16	94%	1%	5%
China	2,830	2,151	2,032	18.6%	77/44	78%	18%	5%
Indonesia	2,838	12,739	11,499	2.6%	78/52	93%	1%	6%
Laos	334	56,381	45,716	0.3%	43/24	82%	10%	8%
Malaysia	580	22,882	19,622	2.2%	95/96	77%	13%	11%
Mongolia	35	13,228	11,714	1.1%	62/59	53	27	20
Philippines	479	5,767	4,946	11.6%	85/73	88%	4%	8%
Thailand	410	6,383	4,314	8.1%	85/99	91%	4%	5%
Timor Leste	-	-	-	-	52/33	-	-	-
Vietnam	891	10,577	13,341	6.1%	73/41	87%	10%	4%
Total	**9,919**	**5,306**	**4,934**	**7.7%**	**77/49**	**83%**	**9%**	**8%**

2.4 Transboundary Water

Many countries in the region rely on waters, both surface and subsurface, that originate in another country (Figure 2). Therefore, these countries depend upon the actions or inaction of other nations to meet their water needs. Prominent transboundary rivers in the region include the Nile, Jordan, Tigris-Euphrates, Indus, Ganges, Brahmaputra, Salween and Mekong. Three

[81] James Kynge, "China Approves Controversial Plan to Shift Water to Drought Hit Beijing", Financial Times, 7 January 2000.

Figure 3: Reliance upon Water Coming From Neighboring Countries (UNESCO)



riparian countries, in particular, dominate the management of important transboundary waters and are central players in any efforts to promote effective transboundary water resources management. These are Egypt (Nile River), India (Ganges, Indus, Brahmaputra), and China (Mekong and Red Rivers).

Transboundary aquifers pose another challenge. Several important aquifers exist in the region that are shared by two or more countries. The most important are found in the Near East and include the Northern Sahara or Eastern Erg, the Nubian, and the Saq/Disi. While countries have discussed the management of transboundary rivers for many years, there has been almost no discussion about the management of transboundary groundwater. Given that aquifers lie below the ground, little information exists about their quality and quantity of water, nor their importance to the maintenance of critical wetlands and coastal habitats.

Historically, most riparian countries have unilaterally implemented water development plans and projects with little to consideration of their neighbors needs until they begin to develop a specific project that directly impacts one or more of the neighboring countries. In the absence of relations or institutions to facilitate consultations and resolve potential conflicts, these projects can become flashpoints that heighten tensions and undermine regional stability. In many cases, it requires years and even decades to resolve disputes (i.e., the Indus river treaty took 10 years

while the Indo-Bangladesh treaty for the Ganges River took 30 years, and the treaty on the Jordan River took 40 years to negotiate). While these negotiations take place, history shows that little consideration is given to maintaining and protecting water quality and quantity, or protecting and managing the ecosystem services the water systems provide for dependent populations.

There already exist several treaties between countries that establish basic allocations and/or management principals for shared rivers. In a few cases, countries have formed an organization to share information, carry out research, facilitate a dialog on the management of the river, and in the rare case, oversee the implementation of a treaty (i.e. Mekong River Commission, Indus Water Commission and the Indo-Bangladesh Joint Rivers Commission). These treaties and organizations provide a place to begin to promote information sharing, improved management and conflict resolution over the use and management of shared waters.

The surface and subsurface waters that cross international boundaries present significant challenges to regional stability because political considerations often overwhelm hydrologic needs. While the potential exists for paralyzing disputes in these basins, history shows that water can catalyze dialogue and cooperation, even between especially contentious countries that share a water resource.

3. Water Management Challenges and Opportunities

3.1 Improve water security by strengthening cooperation on shared waters

While the treaties and basic institutional frameworks exist for regional cooperation in water resources management, in reality little actual coordination takes place between the riparian countries in the region. For example, currently India, China and Turkey are building dams on the Indus, Mekong and Tigris/Euphrates respectively that will impact downstream riparians, yet there has been little consultation on these dams. More problematic, especially in the water-scarce Middle East and North Africa, no system exists for managing transboundary aquifers that countries like Libya and Algeria depend upon for their water supplies. Many countries view discussion and cooperation on transboundary water management as limiting their future options. This attitude poses a significant challenge, but successful examples from around the world can guide USAID's investments in improved transboundary water management.

Opportunities

Historical evidence shows that shared water resources can serve as a catalyst for cooperation. UNESCO's Potential for Conflict to Cooperation Potential (PCCP) program identified the following lessons learned from global experience in managing international water resources:

- Water crossing international boundaries can cause tensions between nations that share the river basin. While tensions have rarely led to actual conflict, early coordination between riparian states can help avoid potential conflicts.

- Once international institutions are in place, they have proven tremendously resilient over time, even between hostile riparian nations, and even when conflict is waged over other issues.

- More likely than the occurrence of violent conflict is the gradual degradation of water quality and/or quantity that over time can affect the internal stability of a nation or region and act as an irritant between ethnic groups, water sectors or states/provinces.

Countries that do successfully coordinate the management of transboundary waters have put in place:

- Adaptable management structures and institutions that allow for public input, changing basin priorities and new information and monitoring technologies;
- Clear and flexible criteria for water allocations and water quality;
- Systems for equitably distributing benefits from water use (rather than equitable use or allocation) as witnessed by the recently established Nile Basin Initiative; and
- Clear mechanisms for resolving disputes even after treaties are negotiated and signed.

Building upon these lessons, USAID can, in coordination with other donors, support the organization and strengthening of both transboundary and national institutions that support the management of transboundary waters. For example, in the case of the dams being built by Turkey, India and China, the riparian countries that share these rivers have already formed regional organizations, a good first step towards greater cooperation. While China has not yet joined the Mekong River Commission (MRC), it does participate in MRC meetings as an observer, and there are increasing efforts by the other MRC members to secure China's membership in this organization. Similarly, India and Pakistan already coordinate the management of the Indus. This relationship provides the basis for resolving potential issues with the new dam being planned by India on the Indus river system. After about four decades of tension between Egypt and the upper Nile countries and despite current hostilities among a number of countries, Nile riparian states are progressively moving toward a shared vision for cooperative, sustainable water resources management. USAID could support other efforts in the Near East like the Arab Water Council's activities to improve the management of aquifers, and the Tri-Partite commission's efforts to begin cooperation on the management of the Tigris-Euphrates rivers. By supporting efforts to improve coordination of management plans and sharing of information, best practices and eventually joint planning among countries that share common water resources, USAID could make a significant contribution towards improving water resources management across the region.

Lessons Learned

Governance is local but it becomes regional when linked to specific transboundary concerns such as severe water quality degradation with direct impacts on human health. Regional cooperation works best when all countries, especially the most powerful, gain from collaborative actions.

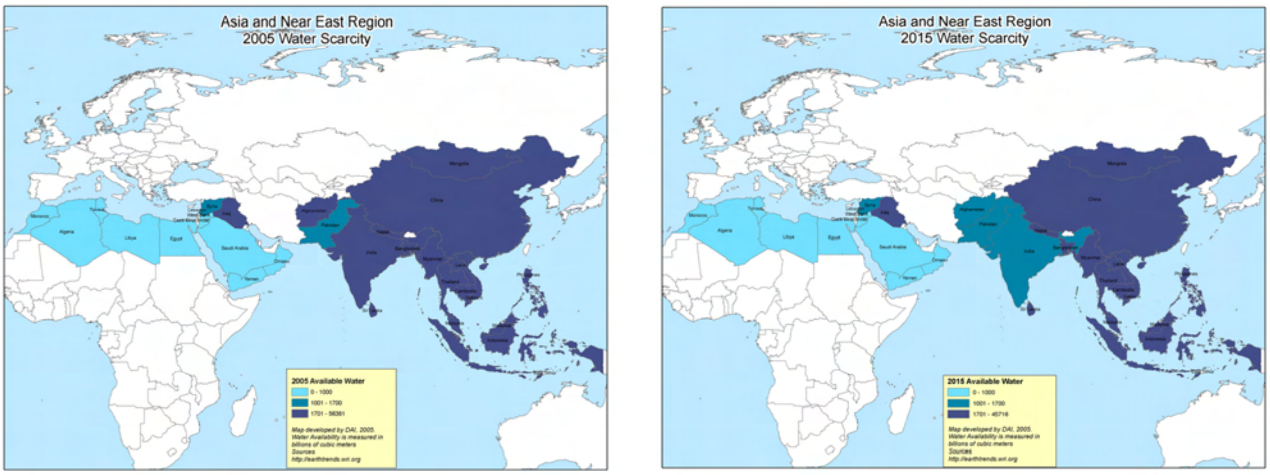
Partnerships and networks are useful vehicles to share knowledge and information, but they need close management and must deliver concrete services to be valued by donors, national governments, and members.

3.2 Improve environmental management and economic productivity of water resources

3.2.1 Meeting the Growing Demand for Water

The overall demand for water resources across the region increases daily, driven by population growth and expanding economies. This is most noticeable in the Middle East and North Africa, and parts of South and East Asia that already face water stress and scarcity. Many countries currently meet water demand by pumping water from underground aquifers – both renewable and fossil, at a rate that cannot be sustained. Countries must balance water demand or risk future reduced water availability that could impact their growing population's needs, sustain food production, and preserve critical riparian habitats. The two maps below show the expected increase in water scarcity (less than 1,000 m^3/person/day) and water stress (less than 1,700 m^3/person/day) by country between 2005 and 2015 (Figure 3). The greatest change occurs in South Asia. These country averages mask extreme scarcities that exist within individual countries in South and Southeast Asia.

Figure 4: Water Stress and Scarcity in the ANE Region in 2005 and 2015



Dark blue – countries with plentiful water (> 1,700 m^3/person/day)
Medium blue – countries with water stress (< 1,700 m^3/person/day)
Light blue – countries with water scarcity (< 1,000 m^3/person/day)

Opportunities

Meeting this growing demand requires that countries conserve existing supplies through water demand management, increase the efficiency of water use, and augment existing supplies through development of new or underused sources of water.

Improve water demand management in urban centers.

Water demand management involves using prices, technology and incentives to encourage more efficient use of scarce water resources. Effective management of water demand can enable utilities to reach more customers with better quality services while postponing new investments in expensive bulk water facilities. Opportunities exist in every country to improve water demand management. Building upon experience gained in the electricity sector, some countries have begun to look at how they can use pricing, allocations and incentive programs to encourage more efficient water use at the household, commercial and industrial levels.

Expand existing water supplies through desalination and reuse of wastewater.

The region, especially the Near East has some of the best experience in the world in both desalination and wastewater reuse. Countries in the region currently produce close to 50 percent of the world's desalinated water and have pioneered the use of wastewater for irrigation and industrial purposes. This experience provides an excellent foundation upon which to share country experiences with those countries that are just beginning the face water stress and scarcity

3.2.2 Improving the Productivity of Water Used in Agriculture

With the exception of Lebanon, agriculture remains the largest user of water resources in every country across the region (Table 4 illustrates the level of water used in agriculture in selected countries). Agriculture's contribution to overall gross domestic product diminishes each year, yet it still remains a significant economic force employing a high percentage of the work force, contributing to national food security, and providing relatively stable sources of foreign exchange that many countries depend upon to fuel their economic development.

Most countries place low value on water used for agriculture. The low cost of water combined with the lack of regulation of groundwater abstraction and, subsidized electricity in countries like India, encourage poor water management and productivity. In countries with plentiful water resources, this poses minimal problems. However, as more countries face growing water stress, the needs of growing urban and industrial sectors will be met by reallocating water from agriculture. This can be accomplished with minimal impact on overall agricultural productivity provided that countries institute the policy, regulatory and institutional changes that encourage and help farmers to use water more efficiently.

Table 4: Water Allocated to Agriculture and Role of Agriculture in the Economy

Country	% Water Allocated to Agriculture (2004)	% Ag Contribution to GDP (2003)	% Employment in Agriculture (2004)
Egypt	82	16	32
Jordan	75	2	11
Morocco	89	17	35
Bangladesh	86	22	54
India	92	22	59
Pakistan	97	23	46
Indonesia	93	17	47
Philippines	88	14	48
Vietnam	87	22	67

Opportunities

Many countries across the region are now focusing on the importance of improving water use efficiency in agriculture. Jordan, for example, is reorganizing its agricultural extension and research institutions to provide better support to farmers in on-farm water management. Other countries are studying the use of market-based approaches, either through water pricing or specific allocations to encourage greater water use efficiency by farmers. Increasing the price for water has proven to be a significant challenge in most countries across the region. The Philippines is attempting to establish a basic bulk water rate that would apply to all consumers including farmers. In other countries, like Jordan, governments are finding it easier to consider

specific water allocations to encourage greater efficiency among farmers. Both approaches offer opportunities to improve the productive use of water in agriculture.

3.2.3 Improving Water Quality Management

Uncontrolled solid disposal practices and lack of treatment of domestic and industrial wastewater treatment, in addition to agrochemical contamination further reduces the availability of freshwater water suitable for domestic and agriculture use, and also affects public health, particularly of children. The problem is most acute in rural areas where many people still lack access to clean water and basic sanitation.

Opportunities

- Many countries in the region are moving towards improving solid waste management
- Increased wastewater treatment coverage and reuse of recycled water offer will reduce pollution of natural river courses.
- Improved fertilizers-pesticide management via agricultural extension will control agrochemical pollution of surface and groundwater.

3.3 Increase access to, and effective use of, safe water and sanitation

3.3.1 Poor Water Supply and Sanitation Management

Over the past fifty years, governments and donors alike have focused most resources on expanding water systems to meet the needs of growing populations. In spite of impressive investments in water distribution systems, most utilities still do not service their entire franchise areas. Performance benchmarks for several large utilities across the region reflect these problems as evidenced by the high levels of non-revenue water (NRW), extremely low tariffs, high staff/connection ratios and low billing/collection ratios (Table 5). The problems facing many utilities across the region can be traced to political intervention in utility operations, the lack of regulation, the use of broad-based subsidies, and the reliance on grants and low-interest loans from national governments and donors for new infrastructure development.

Lessons Learned

- **Weak utility management undermines the effectiveness of new investments in water services.** Many utilities, such as Delhi's, are investing in new bulk water supplies. Meanwhile, they continue to operate with high levels of non-revenue water. Utilities need to reduce non-revenue water as one means to meet growing demand.

- **Women and girls bear a disproportionate share of the burden for water collection.** This responsibility significantly reduces their time available for family, income-generating, and educational activities. Women must have a say in the design and prioritization of new water projects and the opportunity to provide customer feedback on utility performance.

- **Investing in water and sanitation services makes good economic sense.** World Health Organization (WHO) analyses demonstrate that every dollar invested by poor countries in safe, clean water supplies generates a sevenfold benefit in reduced healthcare costs and increased productivity.

Table 5: Urban Water and Sanitation Management in Selected Cities in ANE

City	Water Coverage (%)	Sewer Access (%)	24-Hr Avail. (%)	NRW (%)	Ave Tariff (US$/m^3)	Metered Connections (%)	Working Ratio	Revenue Collect. Efficiency (%)	Staff per 1000 connections
Amman	97	78	0	52	0.65	100	0.71	n/a	6
Bangkok	72	29	100	37	0.23	100	0.30	n/a	4
Casablanca	100	70	100	34	n/a	n/a	n/a	n/a	6
Colombo	69	33	60	36	0.22	70	.52	95	8
Delhi	69	60	1	53	0.07	33	2.45	78	20
Dhaka	72	30	0	40	0.06	51	0.89	82	12
Ho Chi Minh	84	12	75	38	0.18	100	1.13	99	4
Jakarta	51	2	92	51	0.29	99	0,80	98	5
Karachi	58	50	0	30	0.09	1	1.00	54	8
Kathmandu	83	22	0	37	0.09	38	1.04	70	15
Manila	58	7	88	62	0.14	100	1.22	97	4
Phnom Penh	84	41	100	34	0.24	100	.46	100	5
Sana'a	65	22	0	50	0.25	n/a	n/a	n/a	10
Vientiene	63	0	50	28	0.04	100	1.10	77	11
International Best Practice	**100**	**100**	**100**	**Less than 20**		**100**	**0.68**	**100**	**4**

Lack of Regulation: In most cities across the region, the entities in charge of water supply and sanitation also have responsibility for implementing government policies and regulations. This self regulation rarely works well. Elected officials frequently involve themselves in the development and management of water supplies, eliminating the autonomy water utilities need to manage their systems, accounts and personnel. Political involvement in utility operations generally results in low tariffs and overstaffing. Low tariffs and self regulation lead to high levels of non-revenue water and large numbers of urban poor without service. Good economic regulation – that focuses on investment, tariffs and service levels can achieve three basic objectives.

- Provide the utility with autonomy to operate as an independent business.
- Review the prices charged by the utility to ensure they achieve pro-poor and equity objectives while enabling the utility to achieve full cost recovery.
- Hold the utility accountable for achieving specific performance measures.

Widespread Use of Broad-Based Subsidies: Many countries subsidize water for both agricultural and all urban consumers as part of a pro-poor development agenda. However, evidence shows that these broad-based subsidies fail to improve the affordability of water for the poor. In many cities across the region, the poor have limited to no access to the public water system and end up paying much higher prices for water than the rich. For example, poor households

Lesson Learned

Subsidized water prices rarely benefit the poor. Most poor people, especially in South Asia, do not have access to piped water in their homes. Therefore, they do not benefit from the highly subsidized lifeline tariff rates charged by many utilities. Subsidies should be geared toward expanding access.

that are not connected to water systems in India and the Philippines pay prices 10 to 50 times higher to purchase water from tankers and hand carts. Broad-based subsidies encourage wasteful practices, undermine the financial sustainability of the water systems, and place significant burdens on the scarce fiscal resources of national and local governments. For example, many city governments in the Philippines spend more than half their total annual revenues covering the operating and maintenance costs of their city-operated water utilities.

Limited Public Sector and Donor Resources to Meet Need for New Infrastructure: Water infrastructure is ultimately paid for by any or a combination of three parties: water users through fees and charges, taxpayers through local and national fiscal flows, and aid donors including private grant funds. On the average, governments across the region invest less than half the resources needed to meet their water and sanitation objectives. A recent report by the Asian Development Bank estimated that to halve the number of people with no access to safe water and sanitation in Asia alone will require an additional $8.0 billion per year over and above current investment levels[82]. Governments and donors cannot meet this demand. The remaining option is to attract investment from international and national private sectors to meet this demand like is being tested in India and the Philippines. This approach requires the use of creative financing engineering approaches that match investor needs for competitive rates of return with utility needs for loan terms and tenors suited to long-term capital investments. Successfully attracting private sector investment demands improvements in utility governance and operations as well as better designed projects.

Opportunities

Many governments are now beginning to address these problems. They recognize that water utilities should at least cover their operating and maintenance costs if not full capital depreciation costs, and that doing so can postpone expensive capital investments in new water supplies, and improve the ability of utilities to expand water and sanitation services to all households within their franchise area. Several countries are looking at ways to strengthen utility management, establish effective regulation, price utility services on a more cost recovery basis, and develop creative approaches to attract private sector investment in the expansion of water and sanitation infrastructure. For example, the Government of Jordan placed the city of Amman's utility under private management and is now looking at privatizing the utility. In Indonesia, Lebanon and Jordan efforts are underway to strengthen the management of the countries utilities. In addition, the Philippines government has established a water regulatory authority, is reorganizing the national water utility authority, and designing a new financing facility that will blend private sector and donor resources to expand the pool of financing available for water and sanitation infrastructure.

Pooled Financing in Tamil Nadu, India

The state of Tamil Nadu in southern India incorporated the Water and Sanitation Pooled Fund in August 2002. The Fund mobilizes debt financing from the private domestic capital market for priority urban infrastructure. The state gave a grant to fund the debt service reserve and USAID provided a back-up guarantee through its DCA. The Fund finances and refinances water and sanitation projects of small and mid-sized towns. The Fund has successfully mobilized debt market capital for local water and sanitation infrastructure, and offers lower-cost financing and longer tenures without the need for the government guarantees.

The above actions reflect the changing environment and new opportunities emerging across the region to strengthen utility operations and management. Doing so will enable utilities become credit worthy

[82] Asia Water Watch 2015. Nov. 2005

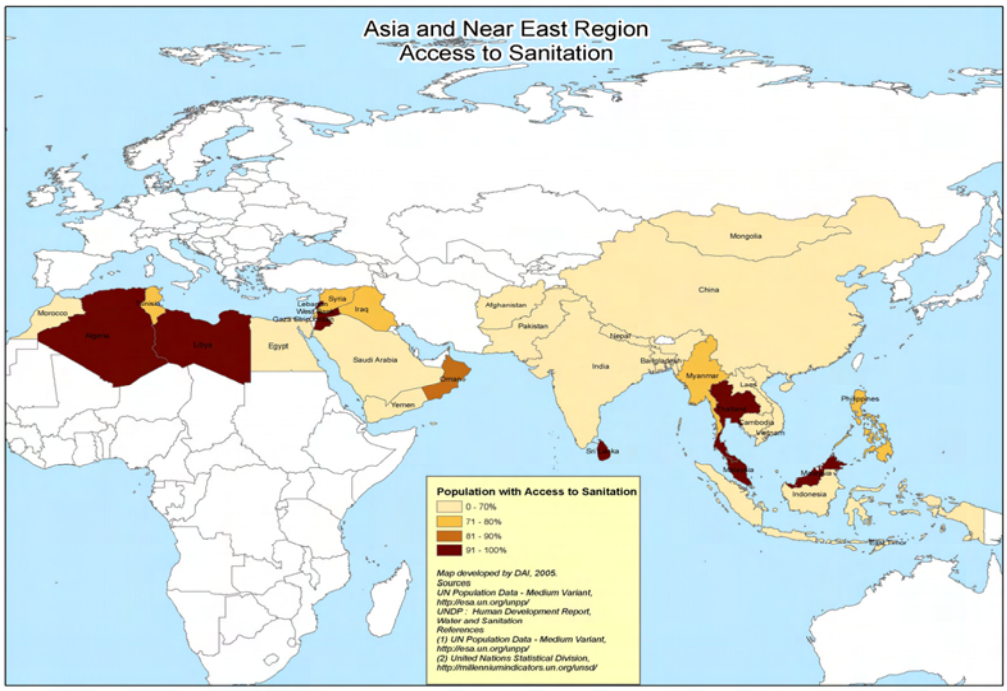
and able to expand their own systems far faster than could be accomplished through only donor and national government grants and loans.

3.3.2 Expanding Access to and Use of Basic Sanitation

Approximately 56 percent or 2.0 billion people lack access to basic sanitation infrastructure across the region (Figure 4). An even smaller percentage protect their health through hygienic use of existing facilities. Several factors contribute to this situation: poorly capitalized water utilities, limited emphasis placed on sanitation by national governments and donors, weak and poorly enforced building codes and sanitation regulations, general lack of public awareness and concern, and the perception of a low public willingness to pay for sanitation services.

Table 5 above also shows the percent of people connected to sewer systems in major cities across the region. It highlights the overall lack of investment in basic wastewater infrastructure in most countries, but masks the fact that few of these sewers reach well operated treatment facilities. In place of centralized sewers and waste treatment facilities, many countries now rely on households and businesses to effectively manage human wastes. Weak to non-existent sanitation building codes and limited enforcement combined with a lack of waste treatment infrastructure and poor public understanding of the need for basic sanitation has contributed to the widespread contamination of the environment that now threatens the health and well being of a large percentage of the region's population.

Figure 5: Population with Access to Basic Sanitation



Peri-urban areas represent particularly unique challenges to improving sanitation. Many of these areas are slums characterized by poor site conditions, unreliable water availability, high population density, heterogeneous populations, and the lack of legal land tenure. These conditions make the current technical and social solutions for low-cost sanitation currently used in rural communities not necessarily appropriate for improving community sanitation in peri-urban areas.

Opportunities

Resolving the current situation requires the coordinated effort of national governments, donors, NGOs and the private sector. There are successful examples of how countries have improved sanitation, especially for the urban and rural poor using relatively low-cost approaches. The solutions are not just technical. Addressing these problems has proven to require the skills of engineers, legal specialists, financial analysts, social scientists, urban planners and a wide range of institutions. Successful past efforts demonstrate the following lessons:

- **Waste management is gender-centered.** Men and women value sanitation very differently. Women put much higher priority on sanitation than men, given their responsibility as key family providers of health and hygiene services.

- **The starting point is the household.** In the absence of public sanitation systems, people provide their own solutions. People will pay for sanitation to have cleaner surroundings, privacy, and less gastrointestinal disease. The household-centered approach has proven successful (people are able to choose a facility that responds to their needs), cost-effective (physical plant is small-scale), and sustainable (investment is privatized). In many peri-urban areas, the focus must move beyond the household to the entire community since individual households will not experience improved health if their neighbors still contaminate the environment with their fecal matter.

- **Changing hygiene behaviors is key**. Most past programs have emphasized the construction of infrastructure. We now know that without adequate social preparation in advance of construction, infrastructure alone is insufficient to reduce health hazards. Successful programs integrate infrastructure with promotion of a small selection of key behaviors that make sanitation desirable and contribute directly to maximizing its health impact.

- **Governments must facilitate good decision making at the household level.** By establishing standards and creating an enabling environment that encourages private-sector involvement and allows households to select from a variety of technologies governments can promote demand for sanitation systems and encourage the use of appropriate technology and management of wastes at the household, community, and city levels. Combined with facilitating better decision making at the household level, governments must also provide for the necessary waste treatment infrastructure – whether through government or private investment, to improve the management and treatment of wastes. In peri-urban environments, especially where household solutions are not feasible, citizen involvement and community participation are critical to successful sanitation programs. Conceptualization, design and construction of peri-urban sanitation systems require the skills of interdisciplinary teams with planners, social scientists, lawyers, economists, environmentalists and engineers. Community participation has proven critical to increased acceptance, cost recovery and effective operation and maintenance

These lessons provide a beginning point for more concerted actions to improve access to basic sanitation across the region. What remains lacking is how these lessons get factored into long-range municipal plans that combine improving access at the household level with city-wide

efforts to improve sewage and septage management. This is an area that many countries are now struggling to address.

Water Contamination and Water-Borne Diseases

Water contamination by fertilizers and pesticides; lack of sewage and sanitation infrastructure, and the indiscriminate dumping of municipal and industrial wastes into canals, rivers, and lakes has reduced the availability of suitable freshwater water for domestic and agriculture use and increased the cost of water treatment. Poor quality water, inadequate water supplies combined with and poor sanitation and hygiene have led to the re-emergence of water borne diseases as a significant health threat. For example, outbreaks of cholera are becoming more common, and the growing threat of water-borne disease has contributed to the high environmental disease burden across the region (Table 6). This disease burden impacts human security and disproportionately falls on children. Water-based, water-borne, and water-related diseases cause approximately 500,000 children deaths each year in the ANE region, a human tragedy, as well as adversely impacting worker productivity and consuming a significant percentage of many countries' health budgets.

Table 6 : Environmental Burden of Disease for selected ANE Countries/Subregions

Country	India	China	East Asia/Pacific	Middle East	(For Comparison) USA
Lost Disability Adjusted Life-Years per 1000 Population	86	33	58	77	14

Studies show that every dollar invested in safe water and basic sanitation yields economic returns between $3.00 and $34.00. A key link between improved water supply and effective sanitation infrastructure and health is through hygiene behavior. Over the past five decades, USAID and other donors have demonstrated that three important hygiene behaviors can significantly improve health:

- Safe handling and storage of drinking water, including, if necessary, disinfection of drinking water at the point-of-use (POU) can reduce diarrhea by 30-40 percent;
- Optimal hand washing can decrease diarrhea prevalence among children by an average of 40 percent; and
- Sanitary disposal of human feces can reduce diarrheal disease prevalence by 30 percent or more.

Opportunities exist within USAID to better integrate investments in hygiene and sanitation, environmental management and utility operations and management to reduce water contamination and water-borne diseases.

4. ANE Response: Launching a Blue Revolution

4.1 Overview

To avert conflict and meet the basic human needs for water will require bold, concerted action by governments, water users, donors, and the private sector working in partnership to transform water management. In response, the ANE Bureau is launching a "Blue Revolution Initiative" to promote water security, prosperity and health in Asia and the Middle East. Given the magnitude of the challenge, achieving success requires a veritable "blue revolution." This Blue Revolution Initiative (BRI) provides a framework to guide USAID's future water-related investments in the ANE region, and facilitate coordination and partnership with other donors, non-government organizations and the private sector as USAID teams with countries to overcome these significant challenges

The BRI directly supports the objectives of the Senator Paul Simon Water for the Poor Act of 2005. The Act makes the provision of affordable and equitable access to safe water and sanitation in developing countries a component of U.S. foreign assistance programs. The BRI provides a framework for translating the requirements of the law into action in the ANE region.

4.2 BRI Objectives

While water programs are a vital element of USAID's development assistance in the ANE region, they are a component of a broader U.S. effort aimed at transformational development that helps build and sustain democratic, well-governed states that will respond to the needs of their people and conduct themselves responsibly in the international system. Improving broad-based access to safe water and sanitation contributes directly to this goal by protecting human health, responding to humanitarian crises, promoting economic development, and enhancing security.

The Director of Foreign Assistance, USAID, and the Department of State are currently undergoing a reorganization of their U.S. foreign assistance programs. The ANE Bureau is working closely with the Director of Foreign Affairs to identify appropriate interventions, develop metrics for measuring and reporting progress, identify priority countries, and develop timelines for projects and programs. The BRI strategic framework is designed to support this process, promoting overall coherence to ANE water sector programming, and guiding the development of projects and programs that can contribute effectively to U.S. foreign policy and transformational development goals.

Within this context, the objectives of the Blue Revolution Initiative are to:

- Mitigate tensions associated with the use and management of shared water;
- Improve environmental management and economic productivity of water resources; and
- Improve access to, and effective use of, safe water and basic sanitation.

4.3 Principles

The Blue Revolution Initiative builds upon past USAID and other donor investments and experiences and will support the further development, testing and adoption of new approaches to address the region's priority water challenges. While many approaches encompassed in this strategy reflect the best practices and lessons learned from the past fifty years, others reflect new, "revolutionary" approaches that emphasize:

- Identifying and mitigating water conflicts at the local, national and regional/transboundary levels. Conflicts are expected to emerge from water shortages and declining water quality in many countries across the region. Their mitigation demands that countries approach the management of surface and ground waters from a more integrated perspective. USAID will provide support to regional institutions that support transboundary water management and build their capacity to engage in regional cooperation, conflict mitigation, and improved management of waters at the river basin level.

- Improving water productivity. The successful shift of water from agriculture to meet growing urban and industrial needs requires improving the multiple, productive use of water (more crop per drop) to maintain food security, nutrition and economic well being.

- Building partnerships with the private sector to expand access to safe water and basic sanitation while improving household hygiene. The relevant MDG target cannot be met by public investment alone, and many private sector entities have corporate interest in sustainable and affordable sources of clean water.

4.4 Priority Areas for Action

4.4.1 Mitigate tensions associated with the use and management of shared water

Nearly one-half of the world's land surface consists of river basins shared by more than one country, and more than 200 major rivers cross national borders. Few institutional or management systems are in place for effectively addressing water disputes or for managing shared water resources. As countries press against the limits of available water, the possibility of conflict will increase. Where water shortages coincide with other sources of tension, such as in the Middle East and South Asia, the threats to regional security are increasingly worrisome.

Under the BRI, USAID and the US Department of State (DOS) will work with other donors and international organizations to support development of frameworks for cooperation and coordination. Such frameworks foster adoption of a shared vision and participatory design and implementation of activities that help ensure equitable distribution of the benefits from water among stakeholders.

Working through national, regional, and global processes, USAID and STATE will work together with other partners to build institutional capacity, political will, and international commitments to improve water security by strengthening cooperation on shared waters.

Examples of activities include:

- Strengthen baseline information on water quality and quantity, and seasonal/inter-annual variations in flows for both rivers and aquifers that can be used by stakeholders for monitoring changes and for the development of national and regional management plans;
- Improve information sharing among riparian countries, especially on water quality and quantity, droughts and floods, and national plans for water use;
- Strengthen the capacity of both regional and national organizations engaged in the monitoring and management of shared waters to use information; and
- Improve the networking and communications among stakeholders about the management of shared waters, and support dialogues that address specific conflicts around uses of shared waters.

Expected Outcomes

Improved baseline information on water quantity and quality and seasonal/inter-annual variations in flow of shared waters. Efforts would strengthen the capacity of organizations in each country to gather information on water quality and quantity of river/aquifers, and help countries develop systems and infrastructure for sharing this information on a timely basis. One outcome will be the development of a uniform set of information that all riparian countries can use for management planning, monitoring of changes, and to improve flood and drought forecasting and response.

Strengthened or new institutions and networks established that promote joint planning and management of shared waters, and dispute resolution. At the regional level, opportunities exist to learn from functioning and respected regional river basin organizations like the Mekong River Commission and other regional platforms like the Arab Water Council to share data, support a dialogue among members, and help resolve conflicts between countries over shared waters. Under the BRI, USAID and State will work with others to identify opportunities where USG assistance can improve information sharing among their members, support management planning and the periodic review and adjustment of plans, identify areas of concern, and help the organizations address conflicts among stakeholders over the use and management of shared waters.

Strengthened national-level governance institutions involved in the development of plans for the management of shared waters. The ability of governments to jointly plan and manage shared waters depends upon the capacity of their organizations responsible for water management. The BRI would strengthen the ability of national governments to participate in, and represent their country interests at, regional discussions on the management and use of shared waters. Their leadership would be made possible by building their ability to monitor, plan and manage shared waters. Efforts would focus around collecting and managing water quantity and quality data for use in decision-making, planning and conflict resolution, and sharing among these organizations examples and experiences from around the world on the successful information-based management of shared waters.

Agreements established or strengthened to promote cooperation on shared waters. Where possible, the BRI would, in coordination with others, help promote, strengthen or establish new agreements between countries around the use and management of shared waters. For example, under the BRI, USAID could support regular meetings between countries to discuss the management of shared waters, based on the model of the Tripartite Commission on the Tigris-Euphrates. One objective of such meetings would be to review existing agreements and work on

changes that will resolve issues with water allocation, pollution, and overall river basin management.

4.4.2 Improve environmental management and economic productivity of water resources

Because fresh water is a finite resource, its protection from pollution and inefficient use are complementary solutions to its conservation and to poverty reduction. USAID, in coordination with BRI partners, will support watershed-based approaches by national and local government to protect fresh water supplies, and improve the productivity of water used in agriculture. This broad objective encompasses many of USAID's ongoing programs in the Near East and Asia.

Examples of activities include:

- Strengthen national government policies and regulation to protect the quality of surface and groundwater.
- Introduce payment for environmental services and other innovative approaches to generate sustained financing for watershed and land management.
- Promote joint planning and cooperation on water use planning and management at regional, national, district, and local levels
- Reduce use of water for irrigation in water-short countries
- Increase use of alternative water supplies for agriculture and industrial purposes
- Adoption of multiple-use planning in water sector planning and management

Expected Outcomes

More "Crop Per Drop" from irrigated agriculture. Currently, few farmers in the region use water resources in the most efficient ways. Too often, irrigation is so poorly managed that over-irrigation of crop lands has led to perched water tables and increased soil salinity making land unusable for crop production. Successfully reducing the amount of water consumed for agricultural production while still meeting the region's food needs will require that: (1) countries to assess and possibly revise the amount of water allocated to the agriculture sector; and (2) farmers adopt more efficient technologies and water management practices. Both are available to the smallholder and agribusiness, but their widespread adoption has not occurred. USAID will support national government efforts to:

- Assist national governments and irrigation water user associations in designing policies, regulations and strategies for pricing and allocating water resources that provide farmers with incentives to switch crops, use water saving technologies and improve on-farm water management.

- Assess where farmers receive information about technologies, integrated efficient water use-increased crop production practices, and work in partnership with the private sector, NGOs and national research and extension systems to improve access to information for farmers.

- Introduce and promote more efficient irrigation technologies and on-farm water management techniques to farmers with special attention to pro-poor technologies and techniques targeting smallholder poverty. This will include building the capacity of farmers, farmer

associations, and national government extension agencies to improve irrigation system and on-farm water management.

- Improve the regulation of wells and ground water abstraction and eliminate or significantly reduce subsidies on other key inputs like electricity to encourage farmers and agribusiness to use water more efficiently;

- Support national government efforts to develop water use plans and design and carry out monitoring systems for tracking progress.

Securing water supplies and improving urban and industrial water use efficiency. Opportunities exist to expand existing water supplies, especially in those countries facing water scarcity. Specific approaches applicable to selected locations will depend upon factors of cost, availability and technical capacity to carry them out. For example, under the BRI, USAID will work with national governments and other donors to examine and implement options such as:

- **Water Demand Management**: Improving water demand management, especially in urban environments and by industry can help countries significantly stretch existing water supplies, usually at much lower cost compared to the development of new bulk water facilities. In many cities around the region, non-revenue water exceeds fifty percent. According to international best practices, this should be less than 20 percent. The difference reflects losses to leakage, theft and/or the provision of water to un-metered users – like standpipes in slums. Instituting effective water demand management requires appropriate policies and regulations, appropriate incentives for domestic, commercial and industrial users, and the institutional capacity to support incentive programs and enforce regulations.

- **Desalination**: The Near East has a long history of using desalinated sea and brackish waters for urban water supplies. Countries in the NE currently produce close to 50 percent of the world's desalinated water to satisfy their municipal and industrial water demands. We expect reliance on desalinated water to increase, especially in Jordan, Israel, West Bank Gaza, and in North Africa as countries exhaust freshwater alternatives. The affordability of desalination technology has improved significantly, while environmental concerns remain. This technology is particularly viable where low cost energy can fuel distillation and reverse osmosis processes, currently costing approximately US$ 0.70 per cubic meter for seawater and closer to US$ 0.50 for brackish water.

- **Treated Wastewater Reuse:** The reuse of treated wastewater for agricultural, industrial, and environmental purposes can help conserve fresh water resources and protect sensitive downstream environments. Wastewater sources include industrial discharges, urban effluent and thermal power stations. Countries have shown the benefits of treated wastewater use for a wide range of purposes, from supplementing potable water supplies (i.e. Singapore) to agricultural production, toilet flushing and industrial cooling water. Over the past two decades, several countries in the Middle East and North Africa have expanded the use of wastewater for irrigation and industrial purposes. The ratio between the use of freshwater versus treated wastewater for agriculture varies between insignificant in Lebanon to about fifty percent in Jordan. It is about ten percent in Tunisia. Expanding treated wastewater use further requires improving and building new collection, treatment and distribution systems as well as regulatory environments that maintain public health.

USAID is well positioned to help countries carry out overall water balance assessments, and within these determine how best to augment current water supplies using water demand management, desalination and/or wastewater recycling. USAID also will work with regional organizations and national governments in the Near East to promote regional water re-use and management, and build the capacity of institutions in the region to provide training in desalination and water recycling/re-use.

Improved protection and management of surface and groundwater resources. These activities will build upon ongoing USAID efforts in several countries across the region to improve river basin planning and management. USAID will work with other donors, national governments, private sector and non-government organizations to strengthen planning, management and monitoring of surface and groundwater quality and quantity. Activities will be aimed at:

- Strengthening national government policies and regulation to protect the quality of surface and groundwater resources;

- Improving the capacity of national and local governments, and stakeholder groups to monitor water quality and quantity used by different sectors of the economy.

- Promote and support dialogue among local and national government agencies around the protection of surface and groundwater quality and quantity. Help support the formulation of agreements for improving the management of these waters.

- Establish bridges linking improve land management and biodiversity conservation with water source protection.

- Help governments test approaches to integrate upstream and downstream water users, like the payment for environmental services that can generate sustained funding for land management improvements and better waste management by households, farms and communities to protect water supplies.

4.4.3 Improve access to, and effective use of, safe water and basic sanitation

Under this objective, USAID will work with national governments, other donors, the private sector and NGOs to expand access to safe water and basic sanitation across the ANE region. Specific efforts will depend upon the existing country situation, and the principal local constraints to achieving the MDGs. As shown in Tables 7 and 8, many countries in the region appear to be on-track to achieve the MDGs, but the unserved population remains very large. This national information also masks significant differences in levels of service within countries, the quality of service, and constraints such as mobilizing the necessary financing for required infrastructure, reaching the poor with affordable and effective services, and the need to achieve improvements at the household level that will improve overall sanitation and hygiene.

USAID will focus its efforts on: improving access to financing for expanding water and sanitation infrastructure, improving the effectiveness of utility operations, working through public-private partnerships to improve household hygiene and sanitation, and expanding sanitation services in the underserved peri-urban and urban areas in selected countries.

Examples of activities include:

- Improve effectiveness of water utility operations including strengthening corporate governance and management, private sector participation, performance contracting, corporatization, demand management and reduction of unaccounted for water;
- Increase mobilization of domestic financing for water infrastructure and service expansion;
- Support behavior-centered approach to hygiene and sanitation improvement, focusing on prevention of diarrheal disease; and
- Expand environmental sanitation in underserved urban areas, including improved septage management.

Table 7. Progress toward MDG Target for Safe Water in the ANE Region

Government	1990	2003	2015 Goal	Population w/o Access to Safe Water (2003)	Per Capita GNI (2004)	Country Classification	GNI Growth Rate (2000 - 2004)
Afghanistan	6%	13%	53%	25,980,810	360	Low Income	17.3%
Bangladesh	71%	75%	86%	35,455,500	440	Low Income	5.3%
India	**68%**	**86%**	**84%**	**154,471,940**	**620**	**Low Income**	**5.7%**
Nepal	75%	80%	88%	5,426,600	260	Low Income	3.6%
Pakistan	**83%**	**90%**	**92%**	**15,793,500**	**600**	**Low Income**	**4.1%**
Sri Lanka	68%	78%	84%	4,562,800	1,010	Low Income	4.1%
Cambodia**	20%	34%	50%	9,286,860	320	Low Income	5.9%
China	70%	77%	85%	302,644,120	1,290	Low Income	8.5%
Indonesia	**71%**	**78%**	**86%**	**49,011,820**	**1,140**	**Low Income**	**4.6%**
Lao PDR	25%	43%	63%	3,376,680	390	Low Income	5.7%
Mongolia	62%	62%	81%	1,005,480	590	Low Income	4.5%
Philippines	**87%**	**85%**	**94%**	**12,458,100**	**1,170**	**Low Income**	**4.6%**
Thailand	81%	85%	91%	9,634,950	2,540	Lower Middle Income	5.0%
Timor Leste	25%	52%	63%	432,000	550	Low Income	3.8%
Vietnam	72%	73%	86%	22,744,260	550	Low Income	7.1%
Egypt	**94%**	**98%**	**97%**	**1,480,660**	**1,310**	**Low Income**	**3.9%**
Iraq	83%	81%	92%	5,473,330	-	Low Income	N/A
Jordan	**98%**	**91%**	**99%**	**513,270**	**2,140**	**Lower Middle Income**	**5.1%**
Morocco	75%	80%	88%	6,295,600	1,520	Low Income	3.8%
Tunisia	77%	82%	89%	1,818,360	2,630	Lower Middle Income	4.5%
West Bank-Gaza	90%	94%	99%	222,120	1,120	Low Income	-9.5%
Yemen.	69%	69%	85%	6,502,250	570	Low Income	3.8%

- Proposed priority governments for initial BRI support in **Bold**

Countries on track to achieve the MDGs in safe water supply.
Estimated baseline and other values

Table 8. Progress toward MDGs for Sanitation in the ANE Region

Government	1990	2003	2015 Goal	Population w/o Access to Basic Sanitation (2003)	Per Capita GNI (2004)	Country Classification	GNI Growth Rate (2000 - 2004)
Afghanistan	0%	8%	50%	27,473,960	360	Low Income	17.3%
Bangladesh	23%	48%	62%	73,747,440	440	Low Income	5.3%
India	**12%**	**30%**	**56%**	**772,359,700**	**620**	**Low Income**	**5.7%**
Nepal	57%	61%	79%	10,581,870	260	Low Income	3.6%
Pakistan	**38%**	**54%**	**69%**	**72,650,100**	**600**	**Low Income**	**4.1%**
Sri Lanka	70%	91%	85%	1,866,600	1,010	Low Income	4.1%
Cambodia	10%	16%	50%	11,819,640	320	Low Income	5.9%
China	23%	44%	62%	736,872,640	1,290	Low Income	8.5%
Indonesia	**46%**	**52%**	**73%**	**106,934,880**	**1,140**	**Low Income**	**4.6%**
Lao PDR	10%	24%	55%	4,502,240	390	Low Income	5.7%
Mongolia	25%	59%	63%	1,084,860	590	Low Income	4.5%
Philippines	**54%**	**73%**	**77%**	**22,424,580**	**1,170**	**Low Income**	**4.6%**
Thailand	80%	99%	90%	642,330	2,540	Lower Middle Income	5.0%
Timor Leste	10%	33%	55%	603,000	550	Low Income	3.8%
Vietnam	22%	41%	61%	49,700,420	550	Low Income	7.1%
Egypt	**54%**	**68%**	**77%**	**23,690,560**	**1,310**	**Low Income**	**3.9%**
Iraq	81%	80%	91%	5,761,400	-	Middle Income	N/A!
Jordan	**80%**	**93%**	**90%**	**399,210**	**2,140**	**Lower Middle Income**	**5.1%**
Morocco	57%	61%	79%	12,276,420	1,520	Low Income	3.8%
Tunisia	75%	80%	88%	2,020,400	2,630	Lower Middle Income	4.5%
West Bank-Gaza	70%	76%	85%	1,665,900	1,120	Low Income	-9.5%
Yemen	21%	30%	61%	14,682,500	570	Low Income	3.8%

- Proposed priority countries for initial BRI support in **Bold**

Countries on track to achieve the MDGs in sanitation
Estimated baseline and other values

Expected Outcomes

Increased mobilization of domestic financing for water supply and wastewater collection/treatment. Meeting the Millennium Development Goals (MDGs) will require the mobilization of significantly greater investments in water and sanitation infrastructure by national and local governments and by households. Achieving these goals will also require governments and donors to broadly apply the designs, technologies and approaches that have proven successful at expanding services to the poor. Local governments will play a significant role in these efforts through public education, ordinances, adoption of proven and affordable approaches, and promoting an environment that encourages greater private sector involvement in water and sanitation service provision. USAID will work closely with other donors like the World Bank, WSP, ADB and JBIC to:

- Learn from and design innovative approaches that will attract domestic private sector investment for water and sanitation infrastructure using water revolving funds and pooled financing vehicles. USAID will use its Development Credit Authority (DCA) guarantee facility with these efforts to expand the overall availability of financing for water and sanitation infrastructure.

- Where high connection fees and limited access to financing impede poor households from connecting to existing water and sanitation systems, USAID will work with utilities and the micro-finance institutions to design and implement cost effective solutions that overcome these impediments.

- Support policy and advocacy programs that stimulate greater private sector involvement in the provision of water and sanitation services and equipment, encourage greater investment by households in improved sanitation infrastructure, and promote better collection and storage of water by households.

Improved effectiveness of utility operations. Significant gains have been and still can be made in water utility management across the region. A handful of innovative leaders can inform and guide regional programs. Gains in efficiency and demand management can postpone expensive capital investments in new water supplies. For example, increasing price to reflect real cost, connecting consumers to meters, registering all connections and improving billing and collections has shown to cut water use by 20 – 40%. A key step will involve helping governments make utilities more independent and holding utilities more accountable for meeting performance standards. Under the BRI, USAID will:

- Work with national governments to improve the targeting of pro-poor water subsidies and provide utilities with greater autonomy to manage their operations, and set tariffs and staff salaries in return for performance improvements including expanding and improving services to poor populations within their franchise areas.

- Work in coordination with other donors and national governments to strengthen or help establish regulatory agencies that can effectively monitor water utility operations and performance, review and approve tariffs that meet both pro-poor and full cost recovery objectives, and hold utilities accountable for achieving specific performance benchmarks.

- Work with utilities, and associations of utilities to improve operation and financial performance. Efforts will specifically target improving customer orientation and relations, reducing non-revenue water and improving billings and collections to achieve full cost recovery. As part of this effort, help utilities design and test approaches for reaching the poor, unserved or underserved populations within their franchise area. USAID will build upon successful examples and test new approaches for providing poor neighborhoods with services (i.e. helping establish new organizations within slums for water/sanitation service delivery as has been done in parts of India, Sri Lanka and Manila).

- Work with national and state/provincial level governments and utilities to develop and implement water safety plans (WSPs). Developing WSPs requires a comprehensive risk assessment and risk management approach in water supply from catchment to consumer. A well managed WSP will ensure good drinking water supply, minimize contamination of source waters, reduce or remove contamination through treatment processes, and prevent further contamination during storage, distribution and handling. WSPs provide a powerful tool for the drinking water supplier to manage the supply safely and assist surveillance by public health authorities.

- At the regional level, USAID will help strengthen regional organizations like the Southeast Asia Water Utilities Network that work with member utilities to strengthen performance benchmarking standards, and to share lessons learned improving water utility operations.

Expanded public-private partnerships for improved household hygiene and sanitation practices. USAID will explore opportunities to work with both international and national private companies like Unilever, Coca-Cola, Levis, etc. to change household sanitation practices and potentially enlist private sector support to expand access to safe water and basic sanitation in areas where company employees live. Efforts could encompass a range of activities including:

- Sanitation and hygiene promotion to improve household understanding/knowledge about the importance of hygiene, hand washing and sanitation at the household and community level and to change household hygiene practices. (i.e. Hindustan Unilever example).

- Promote partnerships between companies and local governments to expand safe water and sanitation services into poor neighborhoods in close proximity to company factories.

- Involve companies in policy dialog on wastewater quality regulations and the role infrastructure and policies play in improving the country's competitiveness and attractiveness to multi-national investment in manufacturing facilities.

Improved environmental sanitation in underserved urban areas, including septage management. USAID will work with other donors like the ADB, World Bank and WSP to broaden the range of technology, knowledge and management choices that poor households and communities can use to manage wastewater and septage. USAID can support activities that:

- Make existing knowledge on approaches to peri-urban and household level sanitation solutions more accessible;
- Support the development of statistics that describe the residents of unserved urban and peri-urban areas and their needs;
- Share the practical implications of applied research within and among countries;

- Design and implement activities that bring sanitation to the urban poor; and
- Document the experiences of those carrying out sanitation activities in urban poor and peri-urban poor areas.

Annex 1: Illustrative Country Selection Criteria

Objective 1: Mitigate tensions associated with the use and management of shared water

Determinants of Priority Water Resources

- Water resources shared by at least two countries under increasing stress.
- At least one country has exhibited interest improving the management of the water resources, such as by building/strengthening basis for planning, monitoring and cooperation on transnational waters.

Country/River System	Faces Water Scarcity/Stress in next 10 years	Expressed Interest in Transboundary Water Mgt.
Mekong (Cambodia, China, Laos, Thailand and Vietnam)	None of the countries face immediate stress, but flooding and drought create seasonal problems.	MRC already formed, sharing data. China not a member.
Indus (India, Pakistan)	Both countries face water stress in the Indus basis	Indo-Pak agreement to share river resources already in-place
Tigris-Euphrates (Iran, Iraq, Turkey, and Syria)	All countries face water scarcity	Conversations are underway to discuss shared water challenges.

Objective 2: Improve environmental management and economic productivity of water resources

Determinants of Priority Countries

- Per capita water availability now and in 10 years.
- Percent of water consumed by the agriculture sector and water productivity of agriculture sector.
- Objective supports US Foreign Policy priorities.
- Ongoing or recently ended USAID investments in improving water productivity or integrated water resources management

Country	Per Capita Water Availability		Percent Water Used by Ag Sector	Water Productivity (m^3 used/$ Ag Contrib. to GNI	Existing USAID Investments
	Today	2015			
Afghanistan	2,177	1,570	99	n/a	Yes, in agriculture productivity, flood control and irrigation system rehab.
India	1,719	1,505	92	3.1	No
Pakistan	1,412	1,153	97	7.0	No
Indonesia	12,739	11,499	93	1.6	Yes, in integrated watershed mgt
Philippines	5,767	4,946	88	3.5	Yes, in integrated watershed mgt
Iraq	2,604	2,056	92	n/a	Yes
Jordan	175	144	75	3.0	Yes, in improved on-farm water management and greater use of treated wastewater in agriculture
Lebanon	1,118	1,009	68	0.4	Yes, in integrated river-basin planning
Yemen	191	140	92	1.5	None

Objective 3: Improve access to, and effective use of, safe water and basic sanitation

Determinants of Priority Countries

- Percent of population without access to safe water and basic sanitation
- Childhood mortality rate
- Commitment to achieving the MDGs
- Objective supports US Foreign Policy priorities
- Ongoing or recently ended USAID investments in improving water productivity or integrated water resources management

Country	Percent of Population with Access to Safe Water	Percent of Population with Access to Basic Sanitation	Childhood Mortality Rate	Existing USAID Investments
India	86	30	87	Yes, FIRE-D
Pakistan	90	54	103	Yes
Indonesia	78	52	41	Yes, ESP and Eco-Asia
Philippines	85	73	36	Yes, ECO-GOV, FORWARD and Eco-Asia
Vietnam	73	41	23	Yes, Eco-Asia
Egypt	98	68	39	Yes, new Secondary Cities project
Jordan	91	93	125	Yes, WDM and WAJ/FAS
WB/Gaza	94	76	39	Yes